

AMENDMENT OF SOLICITATION/MODIFICATION OF CONTRACT				1. CONTRACT ID CODE <div style="text-align: center;">J</div>		PAGE OF PAGES <div style="text-align: center;">1 59</div>	
2. AMENDMENT/MODIFICATION NO. <div style="text-align: center;">0002</div>		3. EFFECTIVE DATE <div style="text-align: center;">13-Jun-2005</div>		4. REQUISITION/PURCHASE REQ. NO.		5. PROJECT NO.(If applicable)	
6. ISSUED BY <div style="text-align: center;">CODE</div> CONTRACTING DIVISION USACE, LITTLE ROCK 700 W. CAPITOL AVE, RM LITTLE ROCK AR 72201- ---		W9127S		7. ADMINISTERED BY (If other than item 6) <div style="text-align: center;">CODE</div> <div style="text-align: center; font-weight: bold;">See Item 6</div>			
8. NAME AND ADDRESS OF CONTRACTOR (No., Street, County, State and Zip Code)				X		9A. AMENDMENT OF SOLICITATION NO. W9127S-05-R-0012	
				X		9B. DATED (SEE ITEM 11) 19-May-2005	
						10A. MOD. OF CONTRACT/ORDER NO.	
						10B. DATED (SEE ITEM 13)	
CODE		FACILITY CODE					
11. THIS ITEM ONLY APPLIES TO AMENDMENTS OF SOLICITATIONS							
<input checked="" type="checkbox"/> The above numbered solicitation is amended as set forth in Item 14. The hour and date specified for receipt of Offer <input type="checkbox"/> is extended, <input checked="" type="checkbox"/> is not extended. Offer must acknowledge receipt of this amendment prior to the hour and date specified in the solicitation or as amended by one of the following methods: (a) By completing Items 8 and 15, and returning _____ copies of the amendment; (b) By acknowledging receipt of this amendment on each copy of the offer submitted; or (c) By separate letter or telegram which includes a reference to the solicitation and amendment numbers. FAILURE OF YOUR ACKNOWLEDGMENT TO BE RECEIVED AT THE PLACE DESIGNATED FOR THE RECEIPT OF OFFERS PRIOR TO THE HOUR AND DATE SPECIFIED MAY RESULT IN REJECTION OF YOUR OFFER. If by virtue of this amendment you desire to change an offer already submitted, such change may be made by telegram or letter, provided each telegram or letter makes reference to the solicitation and this amendment, and is received prior to the opening hour and date specified.							
12. ACCOUNTING AND APPROPRIATION DATA (If required)							
13. THIS ITEM APPLIES ONLY TO MODIFICATIONS OF CONTRACTS/ORDERS. IT MODIFIES THE CONTRACT/ORDER NO. AS DESCRIBED IN ITEM 14.							
A. THIS CHANGE ORDER IS ISSUED PURSUANT TO: (Specify authority) THE CHANGES SET FORTH IN ITEM 14 ARE MADE IN THE CONTRACT ORDER NO. IN ITEM 10A.							
B. THE ABOVE NUMBERED CONTRACT/ORDER IS MODIFIED TO REFLECT THE ADMINISTRATIVE CHANGES (such as changes in paying office, appropriation date, etc.) SET FORTH IN ITEM 14, PURSUANT TO THE AUTHORITY OF FAR 43.103(B).							
C. THIS SUPPLEMENTAL AGREEMENT IS ENTERED INTO PURSUANT TO AUTHORITY OF:							
D. OTHER (Specify type of modification and authority)							
E. IMPORTANT: Contractor <input type="checkbox"/> is not, <input type="checkbox"/> is required to sign this document and return _____ copies to the issuing office.							
14. DESCRIPTION OF AMENDMENT/MODIFICATION (Organized by UCF section headings, including solicitation/contract subject matter where feasible.) REHAB AND PAINT TAINTER GATES AND STOPLOGS, LOCK AND BARRELS This solicitation is amended to make the following revisions: 1. Section 00800, Special Contract Requirements, FAR Clause 52.211-12, Liquidated Damages-- (a) is corrected to read: "If the Contractor fails to complete the work within the time specified in the contract, the Contractor shall pay liquidated damages to the Government in the amount of \$388.00 for each calendar day of delay until the work is completed or terminated." SEE ATTACHMENT							
Except as provided herein, all terms and conditions of the document referenced in Item 9A or 10A, as heretofore changed, remains unchanged and in full force and effect.							
15A. NAME AND TITLE OF SIGNER (Type or print)				16A. NAME AND TITLE OF CONTRACTING OFFICER (Type or print)			
				TEL: _____ EMAIL: _____			
15B. CONTRACTOR/OFFEROR _____ (Signature of person authorized to sign)		15C. DATE SIGNED		16B. UNITED STATES OF AMERICA BY _____ (Signature of Contracting Officer)		16C. DATE SIGNED	

AMENDMENT AUTHORIZATION DESCRIPTION

SECTION SF 30 BLOCK 14 CONTINUATION PAGE

The following items are applicable to this modification:

AMENDMENT 0002

BID SCHEDULE

1. Replace BID SCHEDULE with revised BID SCHEDULE, Encl 1.

TECHNICAL PROVISIONS

1. Make the following word changes to FORM 1442:

Item 10: Revise last sentence to read "... and paint 5 - 60 foot stoplogs."

Item 11: Revise construction period from 742 calendar days to 730 calendar days.

2. Replace SECTION 01270 with revised SECTION 01270, Encl 2.
3. Replace SECTION 01510 with revised SECTION 01510, Encl 3.
4. Add Encl 4 entitled "L&D 5 FLOW DURATION – Based on Super a96x01: POR 1940-1995" after SECTION 01510 as an attachment.
5. Replace SECTION 09965 with revised SECTION 09965, Encl 5.

DRAWINGS

6. Drawing G-1

Revise Stoplog Notes to read as follows:

1. Cleaning and painting of stoplogs may be performed at area A as shown on the map above or at an off-site location chosen by the contractor and approved by the Contracting Officer. Area A is the COE mooring facility and adjacent lay-down area on the left bank, near the upstream end of the lock.
2. If the contractor chooses to use Area A, including mooring facility, it shall be used only for cleaning and painting of the stoplogs, which is to be performed after completion of all tainter gate work. Area A is not be used for other contract work or mooring requirements.
3. Stoplogs shall be picked up by the contractor at the Pine Bluff Marine Terminal, Pine Bluff, AR.
4. The rubber seals on the stoplogs shall be removed prior to cleaning and painting and shall be replaced with new seals.

Amend 0002, Encl 1

SECTION B
BIDDING SCHEDULE
 (To be attached to SF 1442)A

Item No.	Description	Estimated Quantity	Unit	Unit Price	Amount
	BASE BID Gates 1, 2 & 3				
0001	Mobilization	Lump	Sum	\$_____	\$_____
0002	Replacement of Structural Steel Members				
0002A	First 22 Members	22	EA	\$_____	\$_____
0002B	Over 22 Members	5	EA	\$_____	\$_____
0003	Replacement of Structural Tee on Skin Plate				
0003A	First 45 Sections	45	EA	\$_____	\$_____
0003B	Over 45 Sections	22	EA	\$_____	\$_____
0004	Heat and Straighten Structural Steel Members				
0004A	First 9 Members	9	EA	\$_____	\$_____
0004B	Over 9 Members	8	EA	\$_____	\$_____
0005	Grinding of Members				
0005A	First 150 Linear Feet	150	Linear Foot	\$_____	\$_____
0005B	Over 150 Linear Feet	20	Linear Foot	\$_____	\$_____
0006	Miscellaneous Welding				
0006A	First 80 Hours	80	Hours	\$_____	\$_____
0006B	Over 80 Hours	8	Hours	\$_____	\$_____
0007	Blast Cleaning and Painting 3 Tainter Gates	Lump	Sum	XXX	\$_____
0008	Blast Cleaning and Applying 3 Coats of Coal Tar Epoxy Paint to 6 Gate Hitch Blocks	Lump	Sum	XXX	\$_____
0009	Stop Log Installation and Removal				
0009A	First 3 Bays	3	Each	\$_____	\$_____
0009B	Over 3 Bays	3	Each	\$_____	\$_____
0010	Removal, Preparation, Furnish,	Lump	Sum	XXX	\$_____

Amend 0002

	Installation and Adjustment of Side Seal Assemblies on 3 Tainter Gates				
0011	Replacement of 7.5 lb. Anodes	87	EA	XXX	\$_____
0012	Replacement of 44 lb. Anodes	90	EA	XXX	\$_____
0013	Replacing Grease Fittings and Regreasing 6 Hitch Blocks	Lump	Sum	XXX	\$_____
	TOTAL BID PRICE - BASE BID Gates 1, 2 & 3 \$ _____				
	OPTION 1 Balance of Project				
0014	Replacement of Structural Steel Members				
0014A	First 44 Members	44	EA	\$_____	\$_____
0014B	Over 44 Members	15	EA	\$_____	\$_____
0015	Replacement of Structural Tee on Skin Plate				
0015A	First 180 Sections	180	EA	\$_____	\$_____
0015B	Over 180 Sections	88	EA	\$_____	\$_____
0016	Heat and Straighten Structural Steel Members				
0016A	First 32 Members	32	EA	\$_____	\$_____
0016B	Over 32 Members	16	EA	\$_____	\$_____
0017	Grinding of Members				
0017A	First 600 Linear Feet	600	Linear Foot	\$_____	\$_____
0017B	Over 600 Linear Feet	80	Linear Foot	\$_____	\$_____
0018	Miscellaneous Welding				
0018A	First 310 Hours	310	Hours	\$_____	\$_____
0018B	Over 310 Hours	30	Hours	\$_____	\$_____
0019	Blast Cleaning and Painting 12 Tainter Gates	Lump	Sum	XXX	\$_____

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0020	Blast Cleaning and Applying 3 Coats of Coal Tar Epoxy Paint to 24 Gate Hitch Blocks	Lump	Sum	XXX	\$_____
0021	Power-Tool Cleaning and Applying 3 Coats of Paint on Tainter Gate Hoist Platforms	Lump	Sum	XXX	\$_____
0022	Stop Log Installation and Removal				
0022A	First 12 Bays	12	EA	\$_____	\$_____
0022 B	Over 12 Bays	56	EA	\$_____	\$_____
0023	Removal, Preparation, Furnish, Installation and Adjustment of Side Seal Assemblies on 12 Tainter Gates	Lump	Sum	XXX	\$_____
0024	Replacement of 7.5 lb. Anodes	348	EA	XXX	\$_____
0025	Replacement of 44 lb. Anodes	360	EA	XXX	\$_____
0026	Cleaning and Regreasing 30 Gate Hoist Machine Gears	Lump	Sum	XXX	\$_____
0027	Spare Anodes	Lump	Sum	XXX	\$_____
0028	Blast Cleaning and Painting 60-foot stoplogs				
0028A	First 5 60-foot Stoplogs	5	EA	\$_____	\$_____
0028B	Over 5 60-foot Stoplogs	10	EA	\$_____	\$_____
0029	Replacing Grease Fittings and Regreasing 24 Hitch Blocks	Lump	Sum	XXX	\$_____
0030	Demobilization	Lump	Sum	XXX	\$_____
	TOTAL BID PRICE – OPTION 1 \$_____				
	OPTION 2				
0031	Additional Repairs to Cable Hitch Blocks	Lump	Sum	\$_____	\$_____
	TOTAL BID PRICE – OPTION 2 \$_____				

TOTAL BID PRICE – BASE BID plus OPTION 1 plus OPTION 2 \$_____

Amend 0002, Encl 2

SECTION 01270

MEASUREMENT AND PAYMENT

PART 1 GENERAL

1.1 MEASUREMENT AND PAYMENT

Measurement and payment will be based on completed work performed in accordance with the drawings and specifications and on the contract payment schedule. No separate payment will be made for scaffolds, safety nets, work platforms, protective coverings, and all other incidentals required to accomplish the work as directed and specified.

1.2 MOBILIZATION

Payment for mobilization will be made at the contract sum job price for Bid Item "Mobilization" of the Bidding Schedule. Price and payment shall constitute full compensation for labor, plant, equipment and incidentals required for moving and preparation of the contractor's floating plant. The contractor's plant and equipment shall be subject to the approval of the Contracting Officer.

1.3 REPLACEMENT OF STRUCTURAL STEEL MEMBERS

1.3.1 Measurement

The unit of measure to be paid for will be for each member of structural steel that is removed and replaced.

1.3.2 Payment

Payment for replacement of structural steel members, with new structural steel members of the same size will be made at the contract unit price each for Bid Item "Replacement of Structural Steel Members" of the Bidding Schedule. Price and payment shall constitute full compensation for furnishing plant, labor, materials, equipment and incidentals required to complete the work.

1.4 REPLACEMENT OF STRUCTURAL TEE MEMBERS ON SKIN PLATE

1.4.1 Measurement

The unit of measure to be paid for will be for each section of structural steel that is removed and replaced.

1.4.2 Payment

Payment for removing a section of structural tee members adjacent to the skin plate and replacing the section with new structural steel members of the same size will be made at the contract unit price each for Bid Item "Replacement of Structural Tee Members on Skin Plate" of the Bidding Schedule. Price and payment shall constitute full compensation for

furnishing plant, labor, materials, equipment and incidentals required to complete the work.

1.5 HEAT AND STRAIGHTEN STRUCTURAL MEMBERS

1.5.1 Measurement

The unit of measure to be paid for will be for each structural steel member straightened.

1.5.2 Payment

Payment for heating and straightening structural steel members, will be made at the contract unit price each for Bid Item "Heat and Straighten Structural Steel Members" of the Bidding Schedule. Price and payment shall constitute full compensation for furnishing plant, labor, materials, equipment and incidentals required to complete the work.

1.6 GRINDING OF MEMBERS

1.6.1 Measurement

The unit of measure to be paid for will be for each linear foot of grinding members.

1.6.2 Payment

Payment for grinding of members will be made at the contract unit price per linear foot for Bid Item "Grinding of Members" of the Bidding Schedule. Price and payment shall constitute full compensation for furnishing plant, labor, materials, equipment and incidentals required to complete the work.

1.7 MISCELLANEOUS WELDING

1.7.1 Measurement

The unit of measurement to be paid for will be for each hour of miscellaneous welding including grinding and other weld preparations.

1.7.2 Payment

Payment for welding of members will be made at the contract unit price per hour for Bid Item "Miscellaneous Welding" of the Bidding Schedule. Price and payment shall constitute full compensation for furnishing plant, labor, materials, equipment and incidentals required to complete the work.

1.8 BLAST CLEANING AND PAINTING TANTER GATES

Payment for blast-cleaning and applying 4 coats of vinyl paint on tainter gates will be made at the contract sum job price for Bid Item "Blast-Cleaning and Painting Tainter Gates" of the Bidding Schedule. Price and payment shall constitute full compensation for materials, labor, plant, equipment and incidentals required for blasting, cleaning and painting the gate surfaces as specified and shown, including the protection of concrete piers, gate hoisting cables and machinery, stoplogs and lifting beam, and removal of debris from tainter gates.

1.9 BLAST-CLEANING AND APPLYING 3 COATS OF COAL TAR EPOXY PAINT TO GATE HITCH BLOCKS

Payment for blast-cleaning and applying 3 coats, 16 mils, of coal tar epoxy paint to gate hitch blocks will be made at the contract sum job price for Bid Item "Blast-Cleaning and Applying 16 Mils of Coal Tar Epoxy Paint to Gate Hitch Blocks" of the Bidding Schedule. Price and payment shall constitute full compensation for materials, labor, plant, equipment, and incidentals required for blasting, cleaning and painting the tainter gate hitches as specified and shown, including the protection of concrete piers, gate hoisting cables and machinery, stoplogs and lifting beam, and removal of debris from tainter gates

1.10 POWER-TOOL CLEANING AND APPLYING 3 COATS OF PAINT ON TANTIER GATE HOIST PLATFORMS

Payment for power tool cleaning and applying 3 coats of paint on tainter gate hoist platforms will be made at the contract sum job price for Bid Item "Power-Tool Cleaning and Applying 3 Coats of Paint on Tainter Gate Hoist Platforms" of the Bidding Schedule. Price and payment shall constitute full compensation for materials, labor, plant, equipment, and incidentals required for cleaning and painting the surfaces as specified and shown.

1.11 STOP LOG INSTALLATION AND REMOVAL

1.11.1 Measurement

The unit of measurement to be paid for will be for each time stop logs are installed and removed from a tainter gate bay. This constitutes one installation and removal per gate unless directed otherwise by the Contracting Officer.

1.11.2 Payment

Payment for installing and removing the stop logs in each bay will be made at the contract unit prices each for Bid Item "STOP LOG Installation and Removal" of the Bidding Schedule. Prices and payments shall constitute full compensation for installing and removing stop logs. Prices also include loading stop logs and lifting beam at the Pine Bluff Marine Terminal and transporting to the job site, removing debris, logs, drift wood and sediment from gate bays, and manipulating the stop logs and lifting beam to accomplish the work. At the completion of the job, stop logs and lifting beam will be loaded, transported, and stored at the Pine Bluff Marine Terminal.

1.12 REMOVAL, PREPARATION, FURNISH, INSTALLATION AND ADJUSTMENT OF SIDE SEAL ASSEMBLIES ON TANTIER GATES

Removing, preparing, furnishing, installing and adjusting of side seal assemblies and filler material on 15 tainter gates will be made at the contract sum job price for Bid Item "Removal, Preparation, Furnish, Installation and Adjustment of Side Seal Assemblies on Tainter Gates" of the Bidding Schedule. Price and payment shall constitute full compensation for materials, labor, equipment and incidentals required to complete the work as specified and as shown on the drawings.

1.13 REPLACEMENT OF 7.5 LB. ANODES

1.13.1 Measurement

The unit of measurement to be paid for will be for each 7.5 lb. anode replaced.

1.13.2 Payment

Payment for replacing existing 7.5 lb. anodes at existing locations on 15 tainter gates will be made at the contract unit price for each anode under Bid Item "Replacement of 7.5 Lb. Anodes" of the Bidding Schedule. Price and payment shall constitute full compensation for materials, labor, plant, equipment, and incidentals required for furnishing and installing new 7.5 lb. anodes with new ½" diameter anode studs to replace existing 7.5 lb. anodes, existing anode studs and including the removal of the existing studs.

1.14 REPLACEMENT OF 44 LB. ANODES

1.14.1 Measurement

The unit of measurement to be paid for will be for each 44 lb. anode replaced.

1.14.2 Payment

Payment for replacing existing 44 lb. anodes at existing locations on 15 tainter gates will be made at the contract unit price for each anode under Bid Item "Replacement of 44 lb. Anodes" of the Bidding Schedule. Price and payment shall constitute full compensation for materials, labor, plant, equipment, and incidentals required for furnishing and installing new 44 lb. anodes with new ½" diameter anode bolts to replace existing 44 lb. anodes, existing anode bolts and including the removal of the existing bolts.

1.15 CLEANING AND RE-GREASING 30 GATE HOIST MACHINE GEARS

Cleaning and re-greasing 30 spur and pinion gears will be paid for at the contract sum job price for Bid Item "Cleaning and Re-greasing 30 Gate Hoist Machine Gears" of the Bidding Schedule. Price and payment shall constitute full compensation for furnishing labor and materials for cleaning and re-greasing the gears.

1.16 SPARE ANODES

Payment for spare anodes will be paid for at the contract sum job price for Bid Item "Spare Anodes" of the Bidding Schedule. Price and payment shall constitute full compensation for furnishing 10 seven and a half pound anodes, ~~20 five pound anodes~~ and 20 forty-four pound anodes, including all nuts, bolts, studs, washers, and all other materials specified.

Amend 0002

1.17 BLAST CLEANING AND PAINTING 60-FOOT STOPLOGS

Payment for blast-cleaning and applying 4 coats of vinyl paint on the 60-foot stoplogs, including installation of new hollow bulb seals, will be made at the contract sum job price for Bid Item "Blast-Cleaning and Painting 60-Foot Stoplogs" of the Bidding Schedule. Price and payment

shall constitute full compensation for materials, labor, plant, equipment and incidentals required for blasting, cleaning and painting the gate surfaces as specified and shown, including removal of debris from stoplogs.

1.18 REPLACING GREASE FITTINGS AND RE-GREASING HITCH BLOCK ASSEMBLIES

Replacing grease fittings and re-greasing hitch block assemblies will be paid for at the contract sum job price for Bid Item "Replacing Grease Fittings and Re-greasing Hitch Block Assemblies" of the Bidding Schedule. Price and payment shall constitute full compensation for furnishing labor and materials for replacing the grease fittings and re-greasing the hitch block assemblies.

1.19 DEMOBILIZATION

Payment for demobilization will be made at the contract sum job price for Bid Item "Demobilization" of the Bidding Schedule. Price and payment shall constitute full compensation for labor, plant, equipment and incidentals required for site cleanup, preparation and transportation of the contractor's floating plant.

1.20 ADDITIONAL REPAIRS TO CABLE HITCH BLOCKS

Payment for additional repairs to 30 hitch blocks will be made at the contract sum job price for Bid Item "Additional Repairs to Cable Hitch Blocks" of the Bidding Schedule. Price and payment shall constitute full compensation for furnishing plant, labor, materials, equipment and incidentals for additional repairs to 30 cable hitch blocks, as specified.

PART 2 PRODUCTS (NOT APPLICABLE)

PART 3 EXECUTION (NOT APPLICABLE)

-- End of Section --

Amend 0002, Encl 3

SECTION 01510

GENERAL REQUIREMENTS

PART 1 - GENERAL

1.1 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by basic designation only.

ENGINEER MANUAL PUBLICATIONS (EM)

EM 385-1-1 (2003) Safety and Health Requirements Manual

CODE OF FEDERAL REGULATIONS

29 CFR, PT 1926	(Latest) Safety and Health Regulations for Construction
33 CFR B1	(Latest) Appendix A
33 CFR, PT 84	(Latest) Annex I: Positioning and Technical Detail of Lights and Shapes
33 CFR, PT 85	(Latest) Annex II: Additional Signals for Fishing Vessels Fishing in Close Proximity
33 CFR, PT 86	(Latest) Annex III: Technical Details of Sound Signal Appliances
33 CFR, PT 87	(Latest) Annex IV: Distress Signals
33 CFR, PT 88	(Latest) Annex V: Pilot Rules
33 CFR, PT 89	(Latest) Inland Navigation Rules: Implementing Rules
33 CFR 155.320	(Latest) Fuel Oil and Boat Lubricating Oil Discharge Containment
33 CFR 156.120	(Latest) Requirements for Transfer

1.2 MEASUREMENT AND PAYMENT

No separate measurement or payment will be made for the work covered under this section of the specifications; all costs in connection therewith shall be included in the contract unit or sum job price or prices for the work to be performed under the contract.

1.3 BULLETIN BOARD

The Contractor shall furnish, install, and maintain for the duration of the contract, a weathertight bulletin board, having hinged or sliding glazed doors, on which shall be displayed legible copies of (1) the poster entitled "equal employment opportunity is the law" (OFCCP Publication 1420) as required by CONTRACT CLAUSES: EQUAL OPPORTUNITY, AFFIRMATIVE ACTION COMPLIANCE REQUIREMENTS FOR CONSTRUCTION, AFFIRMATIVE ACTION FOR SPECIAL DISABLED AND VIETNAM ERA VETERANS, AND AFFIRMATIVE ACTION FOR HANDICAPPED WORKERS; (2) the Notice to Employees Poster (WH Publication 1321); (3) the schedule of minimum wage rates for the contract as required by CONTRACT CLAUSE: DAVIS-BACON ACT; and (4) current safety posters. The bulletin board shall be mounted where and as approved by the Contracting Officer, in a prominent place accessible to all employees of the Contractor and subcontractors, and to applicants for employment. The bulletin board shall remain the property of the Contractor and shall be removed by him upon completion of the contract work.

1.4 SAFETY AND HEALTH REQUIREMENTS

1.4.1 General

The Contractor shall comply with all applicable provisions of Engineer Manual EM 385-1-1, Safety and Health Requirements Manual, referenced in CONTRACT CLAUSE: ACCIDENT PREVENTION and Occupational Safety and Health Act (OSHA) Standards for Construction (Title 29, Code of Federal Regulations Part 1926 as revised from time to time). The most stringent requirements of the two standards will be applicable.

1.5 QUALITY CONTROL

1.5.1 General

The Contractor shall establish and maintain quality control for his operations to assure compliance with contract requirements and maintain records of his quality control for all construction operations under the contract as specified in SECTION: CONTRACTOR QUALITY CONTROL.

1.5.2 Technical Provisions

This requirement shall apply equally to each section of the Technical Provisions, except where therein the QUALITY CONTROL requirements set forth critical items of work requiring special attention by the Contractor.

1.5.3 Quality Control Inspector Safety Responsibilities

Each Contractor quality control inspector shall be responsible for inspecting the work under his surveillance for compliance with EM 385-1-1, Safety and Health Requirements Manual, and shall immediately bring to the attention of the Contractor's supervisory personnel all unsafe working conditions, unsafe work practices, unsafe tools or equipment and instances of noncompliance with the Safety and Health Requirements Manual.

1.5.4 Quality Control Inspector Environmental Responsibilities

The Contractor quality control inspector shall be responsible for quality control for environment protection specified in SECTION: ENVIRONMENTAL PROTECTION, and shall immediately bring to the attention of the Contractor's

supervisory personnel all instances of noncompliance with the requirements of
SECTION: ENVIRONMENTAL PROTECTION.

1.5.5 Records and Tests

A copy of the records and tests, as well as the records of corrective action taken, will be furnished the Government as directed by the Contracting Officer.

1.6 PROTECTION OF GOVERNMENT PROPERTY

1.6.1 Protection of Government Property

The Contractor shall take measures necessary for protection of the existing buildings, grounds, parking area and other Government facilities.

1.6.2 Protection of Equipment and Concrete Surfaces

The Contractor shall take measures necessary for protection of the existing concrete surfaces, equipment, and machinery. Sheathing shall be in place before painting activities begin. Paint spills, over spray, and other damages shall be cleaned up or repaired.

1.7 WORK HOURS

The Contractor shall arrange his work schedule so that work performed at the Government installation will be during the normal day shift established as 8:00 a.m. to 4:30 p.m., Monday through Friday. Contractor work at the installation during other periods of time will be permitted only on the specific approval of the Contracting Officer or his authorized representative for each specified time. If an operation cannot be completed within the day shift period specified above without loss or additional cost to the Contractor, the workday period for that operation may be extended upon request of the Contractor and approval of the Contracting Officer.

1.8 WORK AREA AND STORAGE AREA

The Contractor's work and storage area shall be confined to the areas designated by the Contracting Officer. Work and storage areas shall typically be within fenced areas of the lock and dam.

1.9 SIGNAL LIGHTS

The Contractor shall display signal lights and conduct his operations in accordance with the General Regulations of the Department of the Army and of the Coast Guard governing lights and day signals to be displayed by towing vessels with tows on which no signals can be displayed, vessels working on wrecks, dredges, and vessels engaged in laying cables or pipe or in submarine or bank protection operations, lights to be displayed on dredge pipe lines, and day signals to be displayed by vessels of more than 65 feet in lengths moored or anchored in a fairway or channel, and the passing of other vessels of floating plant working in navigable channels, as set forth in Commandant U.S. Coast Guard Instruction M16672.2, Navigation Rules: International Inland (COMOTINST M16672.2), or 33 CFRB1 Appendix A (International) and 33 CFR 84 Through 33 CFR 89 (Inland) as applicable.

1.10 FUEL OIL TRANSFER SAFETY REQUIREMENTS

All marine plant used in this contract shall meet applicable U.S. Coast Guard regulations for fuel oil transfer operations. For uninspected vessels, Coast Guard regulations contained in 33 CFR 156.120 and 33 CFR 155.320 regarding fuel coupling devices and provisions for fuel oil discharge containment are applicable. Venting of the fuel tanks is necessary when using the couplings prescribed by 33 CFR 156.120(1) or (2). (SWDSO dated 4 Mar 81, LRD).

1.11 WORK UNDER THIS CONTRACT

The work involves furnishing floating plant, equipment, materials, and labor necessary to perform the painting, repair, and maintenance on the dam, as specified and shown. Work on the dam includes blasting and painting 15 tainter gates and 30 hitch blocks; blasting and painting 30 trunnions; power tool cleaning and painting hoist machinery platforms; replace existing side seal assemblies with new side seal assemblies on 15 tainter gates; replacing and repairing structural members on tainter gates, and blasting and painting of 5 stoplogs. Lock and Dam #5 has 15 tainter gates that are approximately 60 feet wide by 32 feet high.

1.12 PROTECTION OF GOVERNMENT PROPERTY

1.12.1 Protection of Government Facilities

The Contractor shall take whatever measures are necessary or required for protection of the existing buildings, grounds, parking area and other Government facilities.

1.12.2 Protection of Equipment and Concrete Surfaces

The Contractor shall take whatever measures are necessary or required for protection of the existing concrete surfaces, equipment and machinery from the Contractor's operations, as approved by the Contracting Officer. All paint spills and oversprays and other damages shall be cleaned up and/or repaired, as approved by the Contracting Officer.

1.13 FUEL OIL TRANSFER SAFETY REQUIREMENTS

All marine plant used in this contact shall meet applicable U.S. Coast Guard regulations for fuel oil transfer operations. For uninspected vessels, Coast Guard regulations contained in 33 CFR 156.120 and 33 CFR 155.320 regarding fuel coupling devices and provisions for fuel oil discharge containment are applicable. Venting of the fuel tanks is necessary when using the couplings prescribed by 33 CFR 156.120(1) or (2). (SWDSO dated 4 Mar 81, LRD).

1.14 GOVERNMENT PROPERTY FOR USE BY THE CONTRACTOR TO PERFORM WORK

1.14.1 Stoplogs and Lifting Beam for Tainter Gate Bays

The Government will make available to the Contractor for use in performing the work 30 stoplogs and one lifting beam. This number of stoplogs is sufficient for performing work on three gate bays at one time. The Contractor shall not use stoplogs with bent or damaged members. If damaged

members are discovered, the Contracting Officer shall be notified immediately. The lifting beam and stoplogs will be made available to the Contractor at their storage site in the Pine Bluff Marine Terminal at Pine Bluff, AR. The Contractor shall load and transport the stoplogs and lifting beam from their storage site to his floating plant, install and remove the stoplogs as required for the performance of the work, transport the stoplogs and lifting beam back to their storage site, and store the items as directed by the Contracting Officer. The Contractor shall assume responsibility for all Government property while in his possession and control. Damage to the Government property while in the Contractor's possession and control shall be corrected to the satisfaction of the Contracting Officer by and at the expense of the Contractor. Care of Government property is specified below. Stoplog installation requirements are specified in SECTION: MARINE WORK.

1.15 PROTECTION OF DAM AND APPURTENANCES

1.15.1 Protection of Gate Hoist Machinery

Every precaution shall be taken by the Contractor to prevent sand, paint, and other foreign material from being deposited on the gate hoist machinery and gate lifting cables. Prior to commencing sandblasting operations the equipment shall be completely covered with an approved covering of sufficient size as to completely shield each hoist machine of the gates being worked on. Depending upon wind conditions and/or fogging of sand or paint, adjacent hoist machinery shall be protected as directed by the Contracting Officer. The gate hoist ropes and the side seal plates shall not be sandblasted nor painted. Punctures and tears in the shielding material shall be immediately repaired and sealed. Removal of the shielding material shall be with care to avoid dropping any foreign material, such as sand, on the cables or machinery. In the event that foreign materials are unavoidably deposited on the cables or machinery the materials shall be completely removed; and if foreign materials are deposited on the gear grease, the grease shall be removed and the gears regreased prior to operating the respective gate machine. If removing the grease from the cable drum or grease is necessary, it shall be performed in such manner as to prevent grease from dropping on the concrete, machinery, tainter gate, or in the river. The gear grease shall be removed down to bare metal using mineral spirits or other applicable solvents having a flashpoint above 100 degrees F. The solvent cleaning shall be done with clean cloths and clean fluids to avoid leaving a thin film of greasy residue on the surfaces to be regreased. The grease furnished by the Contractor for regreasing shall be Keystone Moly 29, and shall be applied in a manner acceptable to the Contracting Officer. Protection of gate hoist machinery will be paid for as specified in SECTION: MEASUREMENT AND PAYMENT.

1.15.2 Protection From Damage by Floating Plant

The Contractor shall provide and maintain means for securely mooring (and softening the impact of) barges or other floating work platforms to prevent damage to the piers, gate structure, and stoplogs, throughout the life of the contract. Proposed mooring devices and procedures, impact-softening devices, and general layout of equipment proposed for use on barges or floating platforms shall be submitted for approval prior to commencement of work.

1.15.3 Protection From Sandblasting and Paint Overspray

The Contractor shall furnish items as required to prevent sandblasting and paint overspray on the surfaces of the concrete piers, stoplogs, hoist

machines, and any other surfaces not designated to be painted under this contract. Protective items and procedures shall be approved by the Contracting Officer. Concrete piers adjacent to the gates shall be protected to prevent damage from sandblasting and prevent coating with paint. Protection from sandblasting and paint overspray will be paid for as specified in SECTION: MEASUREMENT AND PAYMENT.

1.16 ORDER OF WORK

See Section: PAINTING, where requirements for paint testing indicate that at least a 30-day period must be allowed for Government testing of all paint to be used in the work under this contract. Work on the gates shall be restricted to adjacent gates, and shall be performed under river flow conditions as indicated in paragraph: GATE OPERATION AND POOL REGULATION below. Maintenance painting operations shall start on the lock end of the dam and proceed across the river.

1.17 GATE OPERATION AND POOL REGULATION

Pool regulation will be the responsibility of the Government and the required work shall be scheduled accordingly. At times during high flows and large discharge periods the water levels downstream from the dam may reach heights that would require removal of the floating plant and stoplogs. The Contracting Officer will notify the Contractor approximately 12 hours on average in advance of being required to be ready for passage of high flows. Periods of work suspensions caused by high river flows are not included in the contract construction period. Contractor will receive time extensions (only) under the default clause for these work suspensions. Floating plant may be based upstream or downstream of the dam for painting operations, however, during periods of low river flows the water level in the stilling basin may not be adequate for floating plant operation.

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1.17.1 Gate Operation

The full spillway discharge capacity may be required to pass river flows. The Contractor shall cease work when the discharges result in unacceptable work conditions upstream of the dam or when unacceptable turbulence occurs downstream of the dam. More than three gates may be closed during low flows if permitted by the Contracting Officer. Also, it may be possible to open some of the closed gates without interfering with the Contractor's operations and thereby minimize delays. The tainter gates will be adjusted by the Contracting Officer to reduce the turbulence and minimize possible erosion of the streambed of the stilling basin. The gate opening differential between adjacent tainter gates will be limited to a maximum of 1 foot to prevent erosion of the stream bed adjacent to the stilling basin. This will limit the maximum flow at which the Contractor can have gates closed for maintenance repairs. Conditions requiring all of the tainter gates to be opened will vary with the Arkansas River discharge and the number and location of the gates that are closed. Based on the discharge, gate locations, and the average monthly Arkansas River discharge duration, an estimate of the probability of work stoppage, has been prepared and is presented in the table at the end of this section. Also included at the end of this section are the monthly flow duration curves for the Arkansas River in the vicinity of Lock and Dam No. 5. These were developed based on a system simulation model (SUPER A96X01) of the 1940-1995 period of record gauged inflows to the system. The duration analyses for each respective month were derived from the mean daily flows computed for each day of each

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month, for each year of the period of record. For example, the month of January duration analysis is based on the daily flows for each day of January, for each year of the period of record (31 days X 56 years = 1736 daily values). These daily flow values were assembled in rank order and the percentage of time a flow value was equaled or exceeded calculated. The full data sets for each respective month were then interpolated at intervals to produce the data sets from which the monthly flow duration curves were plotted. These monthly flow duration curves are the curves used to determine the duration of the selected flows shown in the table entitled "Lock and Dam #5, Work Stoppages for Three Adjacent Gates Closed". The monthly flow duration curves expand on the information provided in the work stoppage table by providing an estimate of the percent of time any given flow may be expected to be equaled or exceeded in any given month of the year.

1.17.2 Operation of Gates on Which Work is Being Performed

The Contractor shall raise and lower the tainter gates begin painted under the supervision of the Government personnel. The Contractor shall assume responsibility for the gate hoisting equipment while under this operation, and shall repair any damage to the equipment caused by his operations at his expense. The tainter gate locking procedure shall be employed while the gate is being repaired in a raised position. A sketch and instructions of the locking procedure is included at the end of the SECTION: MARINE WORK.

1.17.3 Stoplog Handling Caused by River Stages

At times during high flows the water may reach heights that will require removal of the floating plant and stop logs. Stoplog removal and reinstallation that is required because of river stages, and not otherwise required for the normal execution of the work as shown and specified, shall be as directed by securing the written permission of the Contracting Officer. If the Contracting Officer directs the Contractor to remove stoplogs and reinstall them, the removal and reinstallation will be paid for as specified in SECTION: MEASUREMENT AND PAYMENT.

1.18 Not Used.

1.19 CARE, MAINTENANCE AND UTILIZATION OF GOVERNMENT PROPERTY

1.19.1 Scope

This paragraph establishes minimum requirements as to care, maintenance and utilization of Government property in the Contractor's possession or control from the time of receipt of the property until properly relieved of responsibility in accordance with the contract. The removal of Government property to storage, or its contemplated transfer to another location, does not relieve the Contractor of these responsibilities.

1.19.2 Contractor's Maintenance Program

The Contractor shall establish and maintain a system to control, protect, preserve, and maintain all Government property. The Contractor's property control system shall be submitted for approval unless the Contracting Officer determines that a written system is not necessary. The Contractor's approved maintenance program shall provide for:

(1) Policy reflecting the need for and the performance of preventative maintenance;

- (2) Policy for reporting of need for capital type rehabilitation, and
- (3) Recording of work accomplished under the maintenance program.

1.19.2.1 Preventive Maintenance

Preventive maintenance shall be performed on a regularly scheduled basis to prevent the occurrence of defects, and to detect and correct minor defects before they result in serious consequences. An effective preventive maintenance program shall include inspecting equipment (stoplogs and lifting beam) periodically to assure detection of maladjustment, wear, or impending breakdown; regularly scheduled lubrication of bearings and moving parts of lifting beam; protection from exposure to deteriorating agents such as solvents and thinners; and protection from sandblasting operations.

1.19.2.2 Capital Type Rehabilitation

The Contractor's maintenance program shall provide for the disclosure and reporting of the need for major repair, replacement of parts, and other rehabilitation work for Government property in his possession and control.

1.19.2.3 Records of Maintenance

The Contractor's maintenance program shall provide for sufficient records to show the maintenance actions performed and deficiencies discovered as a result of inspections.

1.19.3 Utilization of Government Property

The Contractor's procedures shall be adequate to assure that the Government property will be utilized only for those purposes authorized in the contract.

1.20 CLEANING AND REGREASING GATE HOIST MACHINE GEARS

After maintenance painting has been completed the Contractor shall clean and re-grease the spur and pinion gears on each gate hoist machine. The cleaning re-greasing operations shall stay at least four gate bays behind the cleaning and painting operations. Each of the 30 spur and pinion gears shall be cleaned down to bare clean metal and greased with Keystone Moly 29 grease. Cleaning and regreasing gate hoist machine gears will be paid for as specified in SECTION: MEASUREMENT AND PAYMENT.

1.21 TEMPORARY ELECTRICITY

Electric power (110 volts) will be furnished at each machinery platform by the Government to the Contractor.

1.22 TEMPORARY WATER

The Contractor shall provide for potable drinking water for his personnel and the Government inspector.

1.23 TEMPORARY SANITARY FACILITIES

The Contractor shall provide for temporary sanitary facilities for his personnel and the Government inspector. Disposal of collected refuse shall

not violate the pollution requirements specified in SECTION: ENVIRONMENT PROTECTION.

1.24 ACCESS ON DAM STRUCTURE

Under this contract, access on walkways on dam structure will be limited to personnel only as required to operate gates, subject to approval by the Contracting Officer.

1.25 USE OF EXISTING LINE HOOKS

Line hooks on the dam will be made available to the Contractor for use in mooring floating plant during normal and low flows, subject to the approval of the Contracting Officer. Care shall be taken to prevent damage to handrails. Portions of the handrail may be removed temporarily to prevent damage. Any handrail damaged shall be replaced by and at the expense of the Contractor.

1.26 AFTER AWARD OF CONTRACT

A pre-work conference will be held at such time and location as determined by the Contracting Officer for purpose of discussing and developing mutual understanding between the Contracting Officer's and Contractor's construction, quality control and safety representatives regarding the terms, conditions and requirements of the contract.

1.26.1 The Discussion Will Include But Will Not Be Limited To The Following:

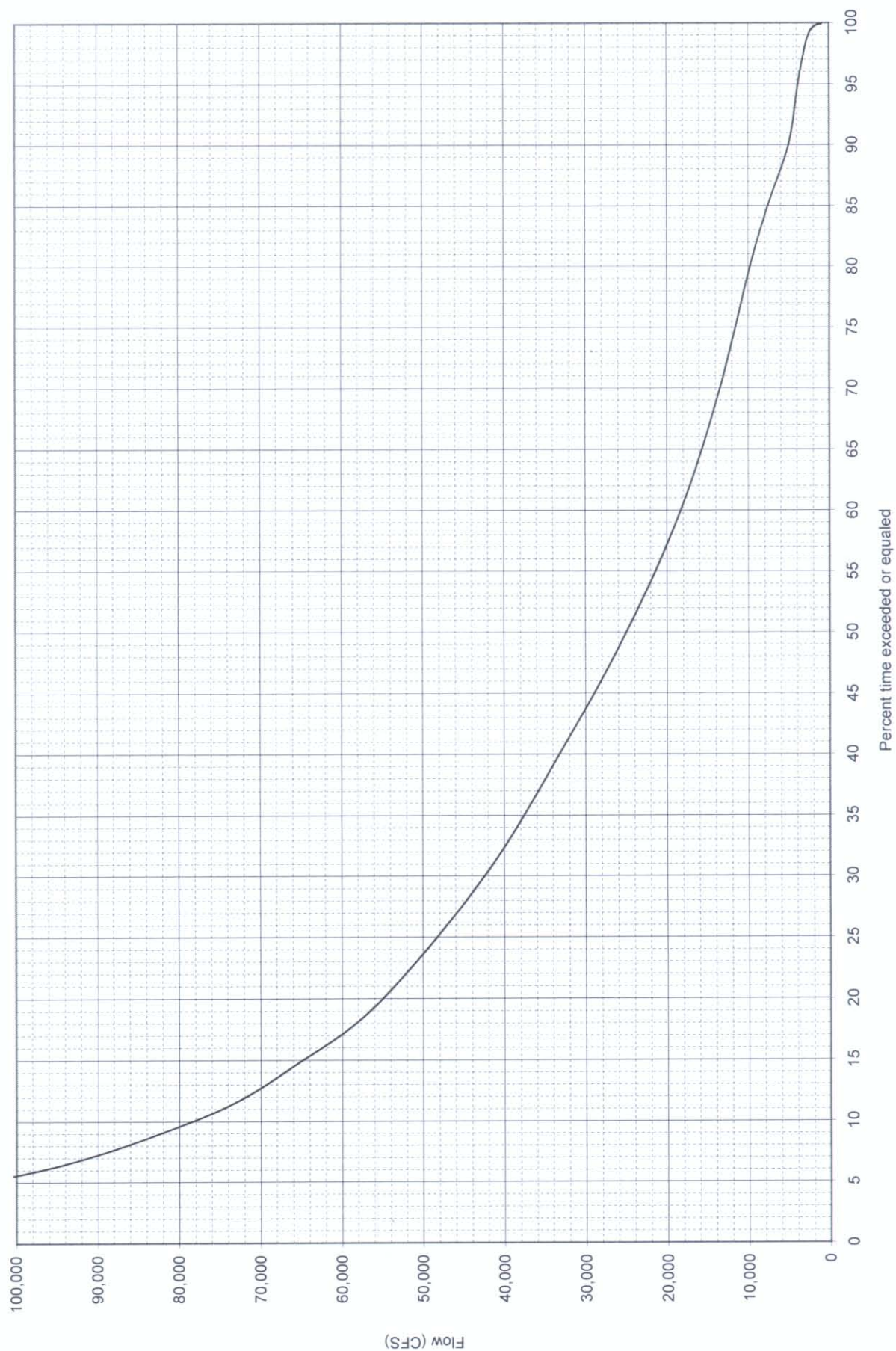
- (1) Contracting parties project staff.
- (2) Correspondence Between organizations and procedures to be followed.
- (3) Safety Program.
- (4) Environment Pollution Control Program
- (5) Lead Based Paint Abatement and Disposal Program
- (6) Non-Painted Items Protection Program
- (7) Quality Control Program
- (8) Other Subjects That May Be of Interest To the Contracting Parties.

PART 2 PRODUCTS (NOT USED)

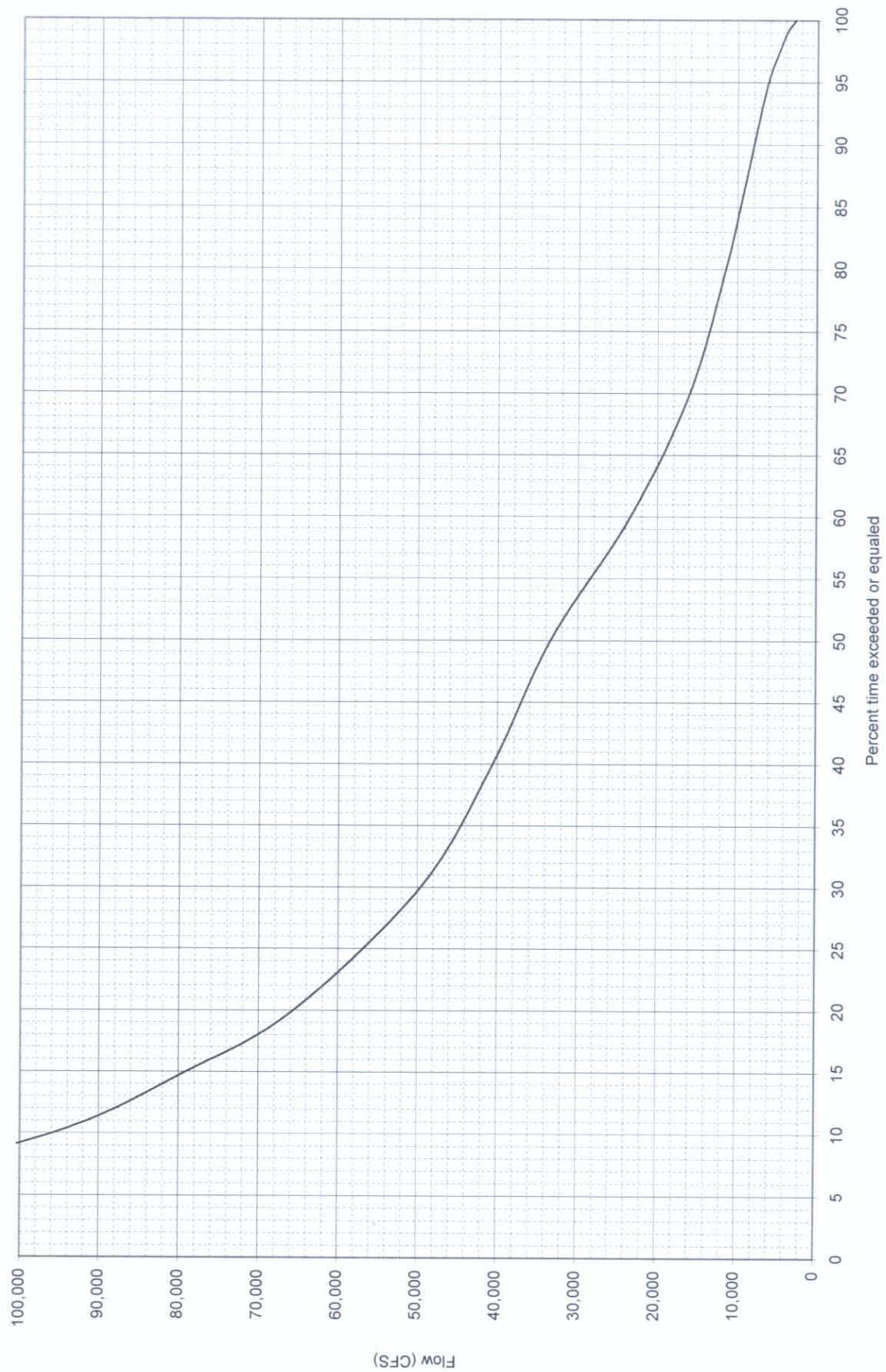
PART 3 EXECUTION (NOT USED)

-- End of Section --

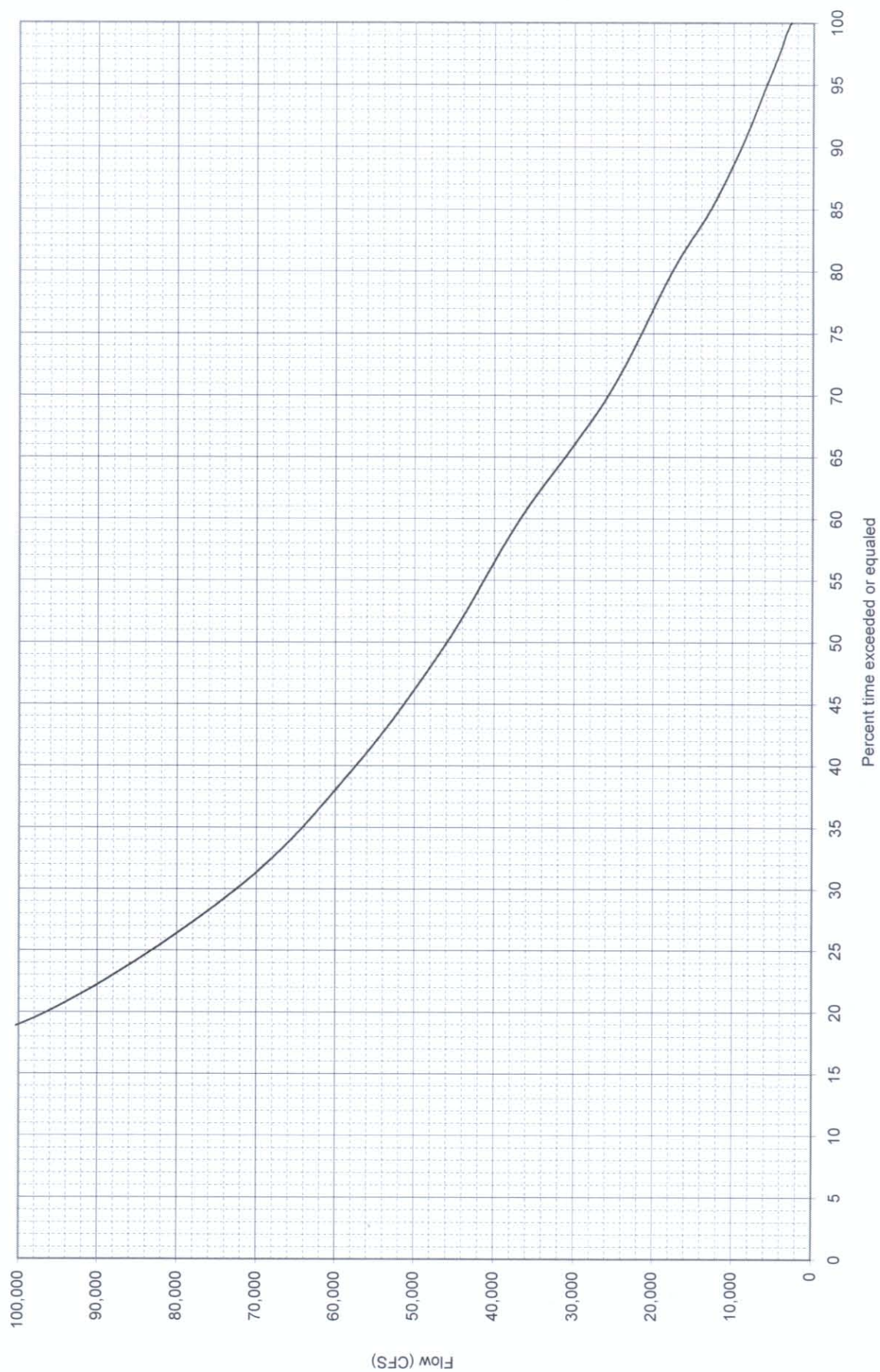
L&D 5 FLOW DURATION
Based on Super a96x01: POR 1940-1995
JANUARY



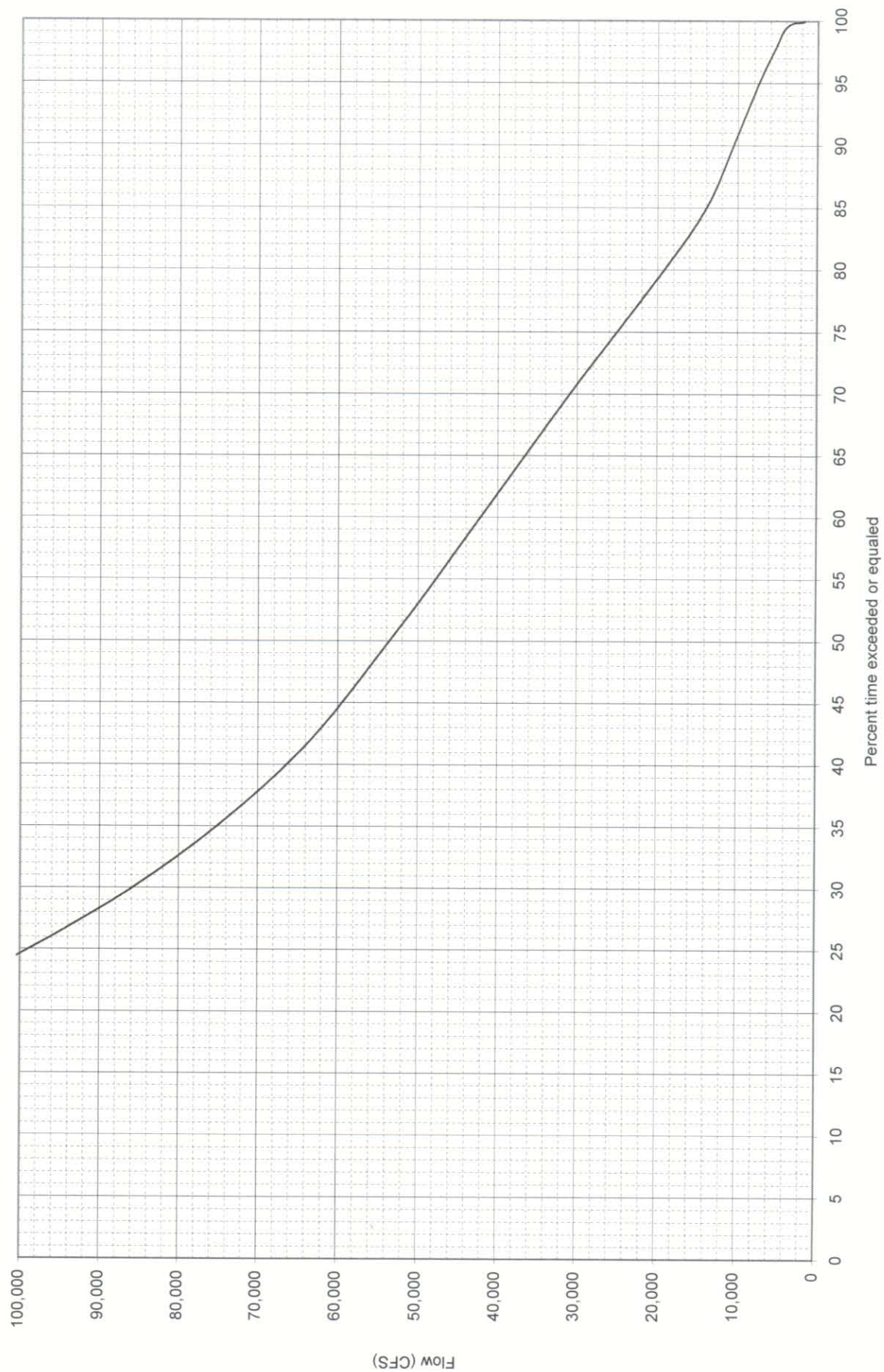
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Based on Super a96x01: POR 1940-1995
February



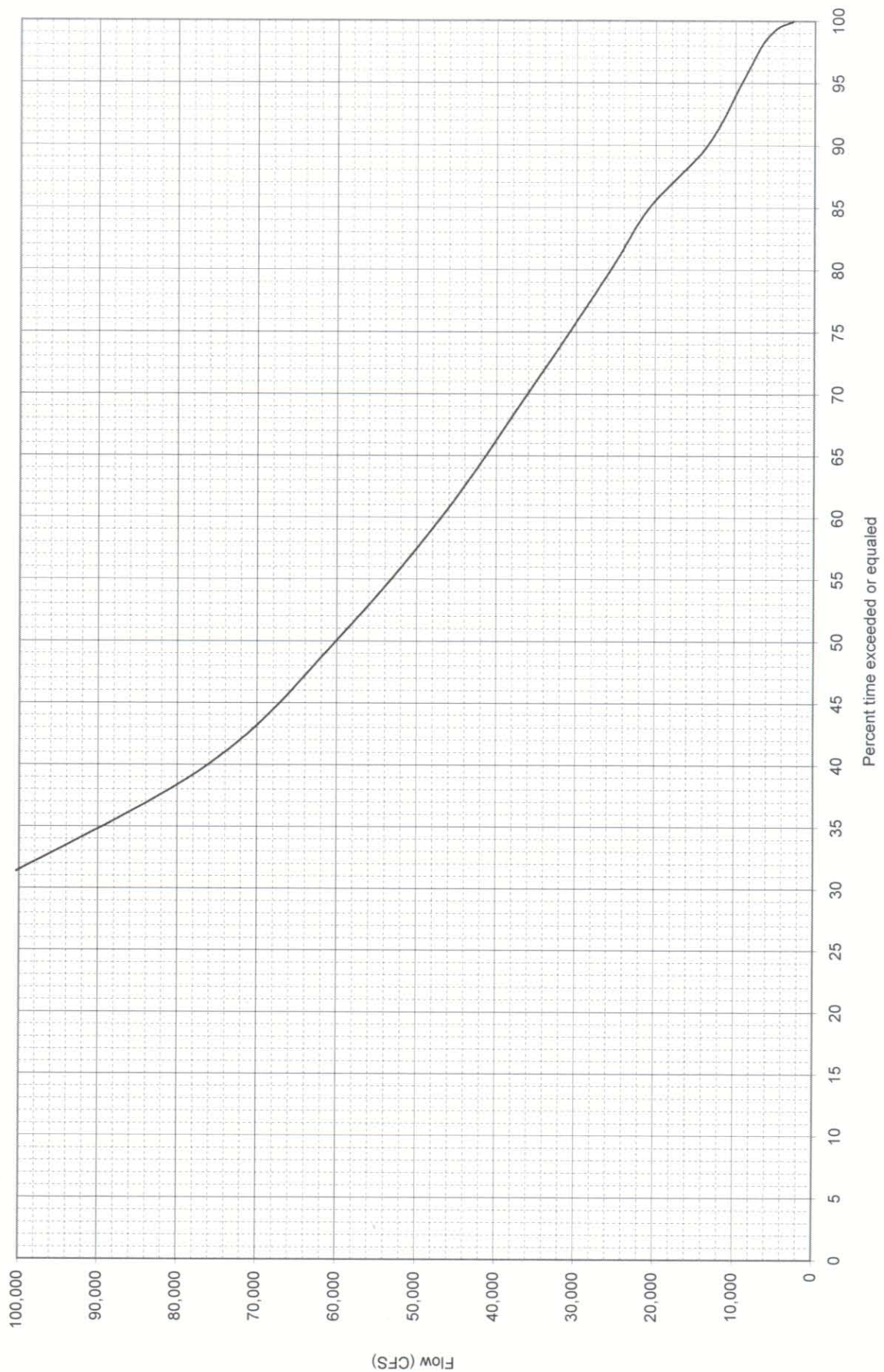
L&D 5 FLOW DURATION
Based on Super a96x01: POR 1940-1995
March



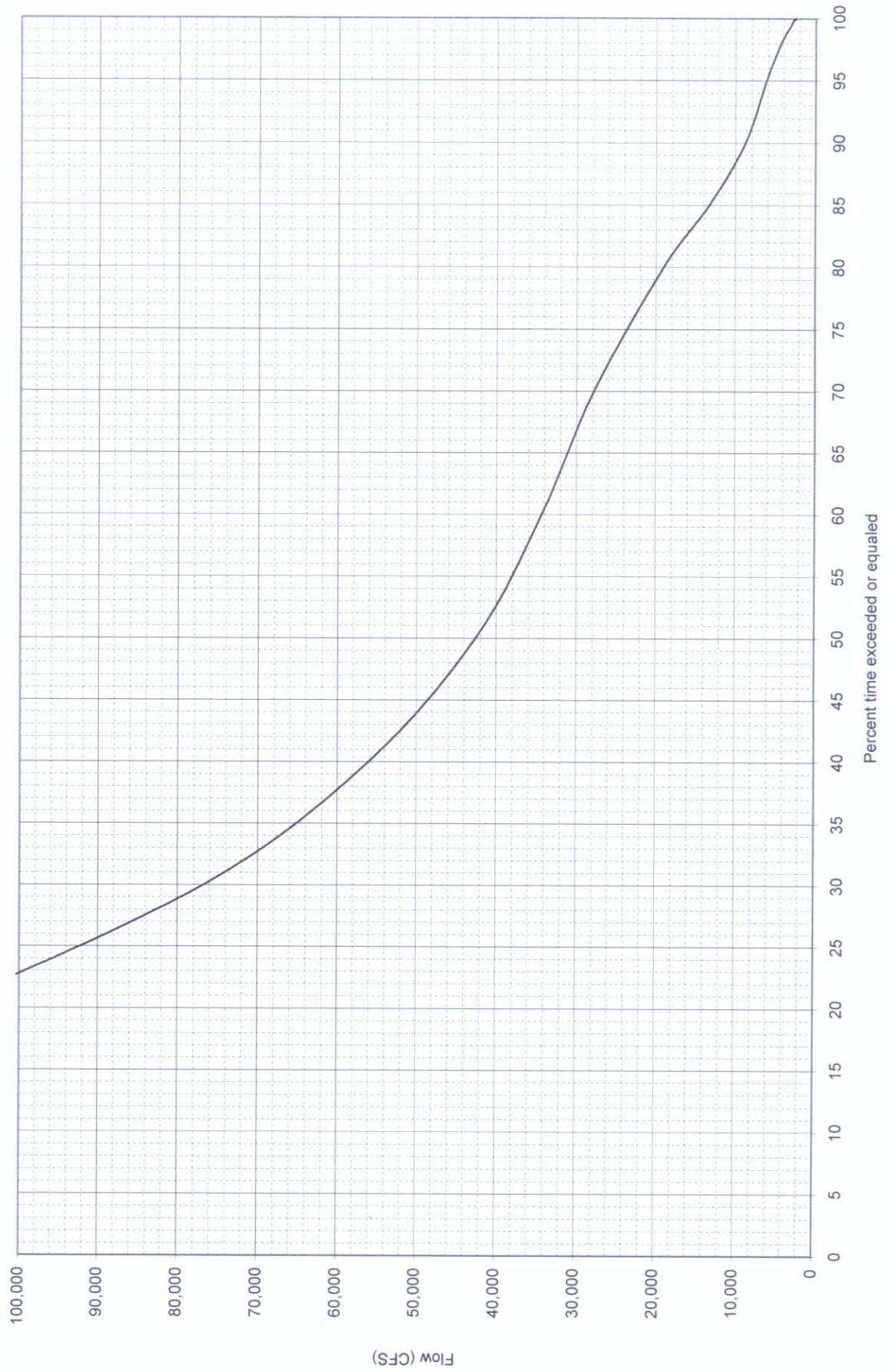
L&D 5 FLOW DURATION
Based on Super a96x01: POR 1940-1995
APRIL



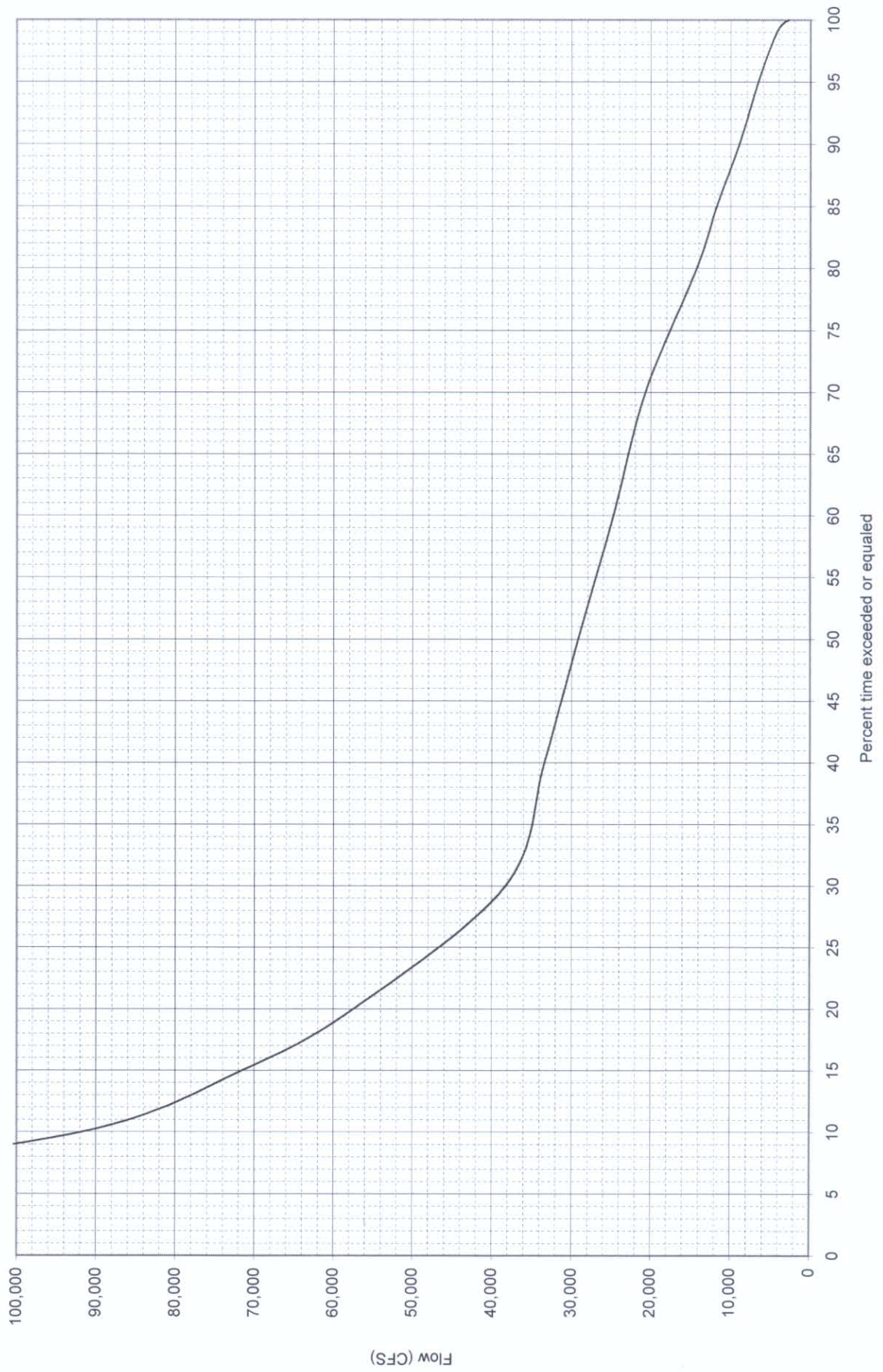
L&D 5 FLOW DURATION
Based on Super a96x01: POR 1940-1995
MAY



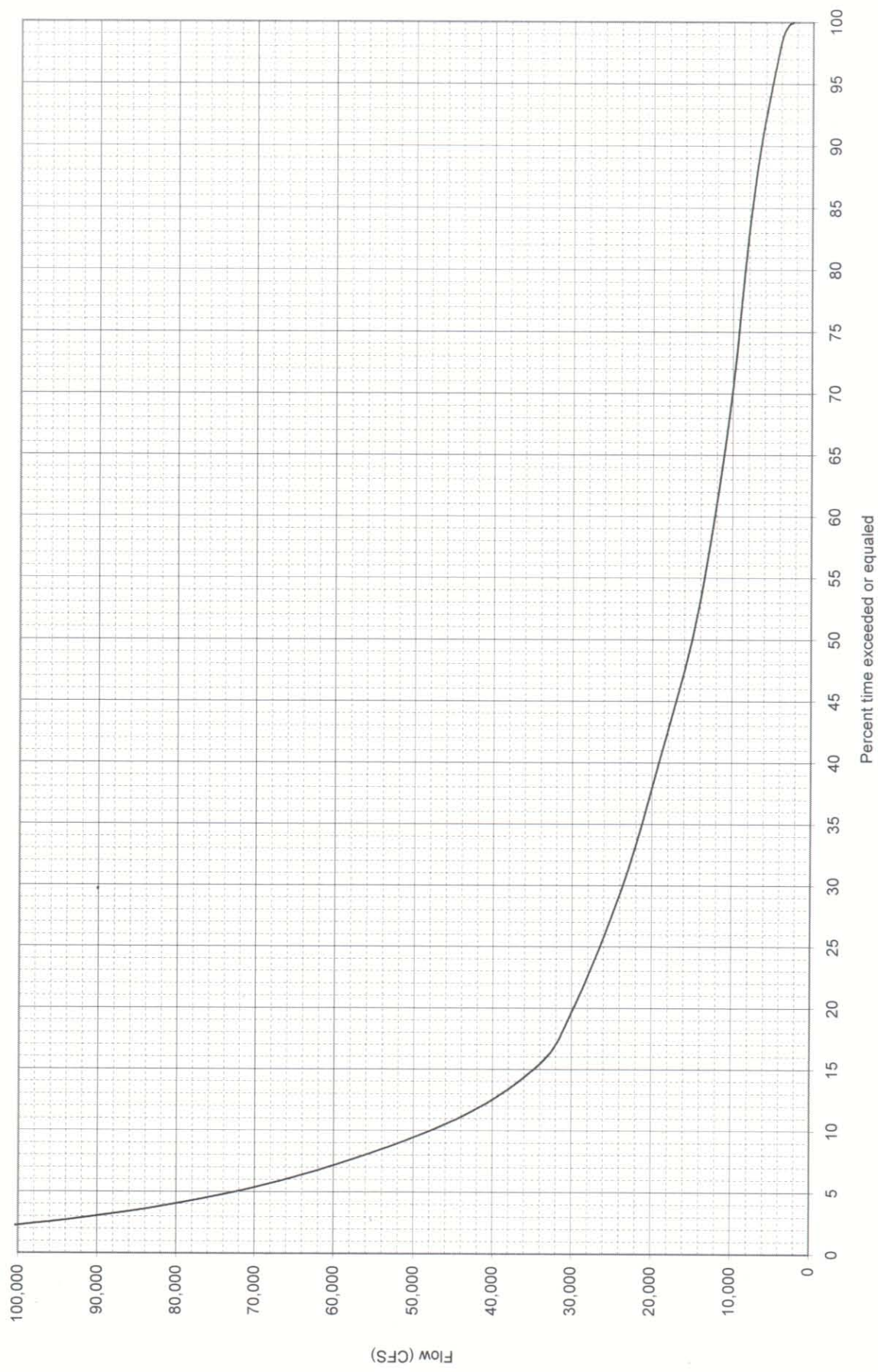
L&D 5 FLOW DURATION
Based on Super a96x01: POR 1940-1995
JUNE



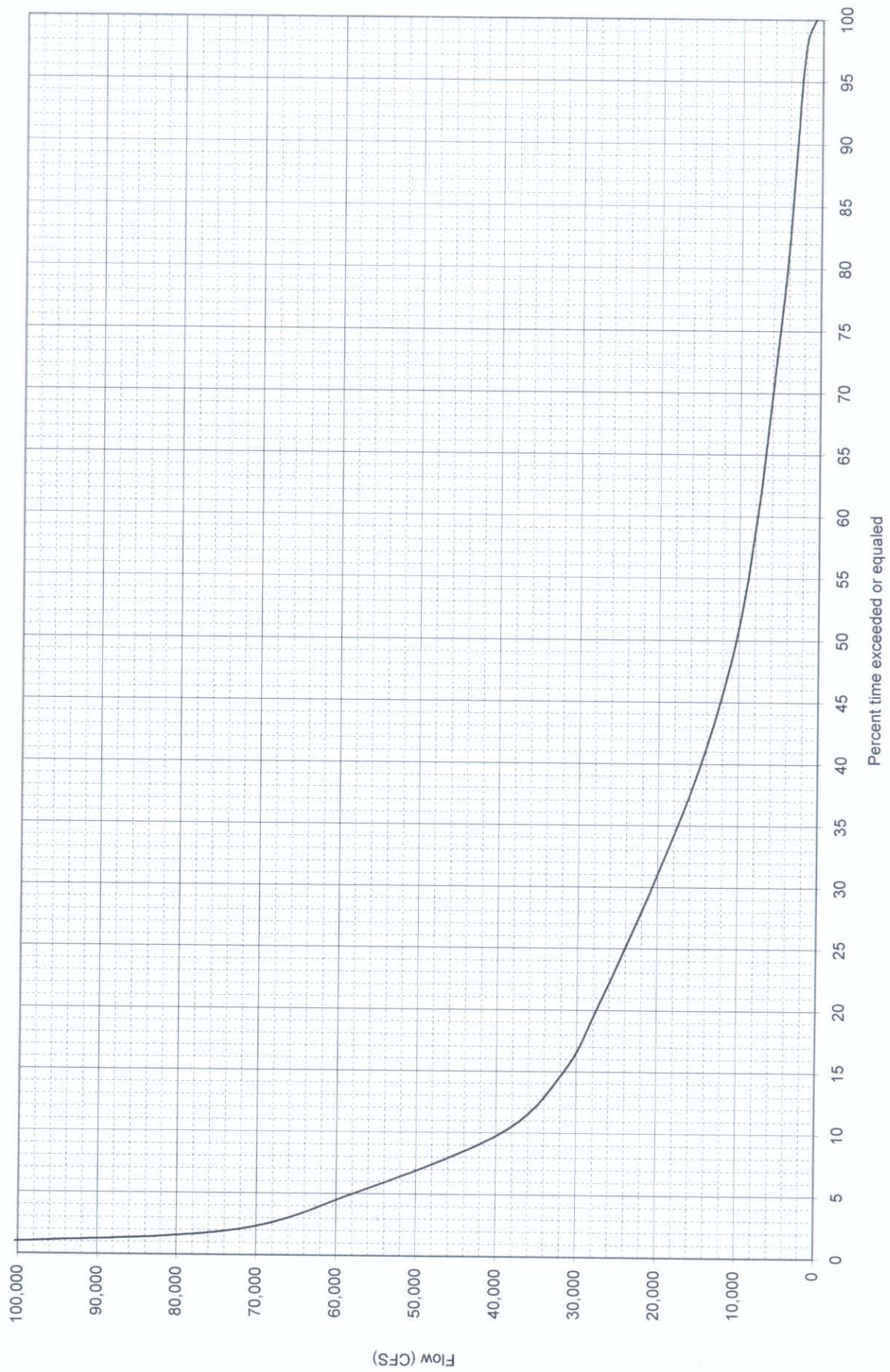
L&D 5 FLOW DURATION
Based on Super a96x01: POR 1940-1995
JULY



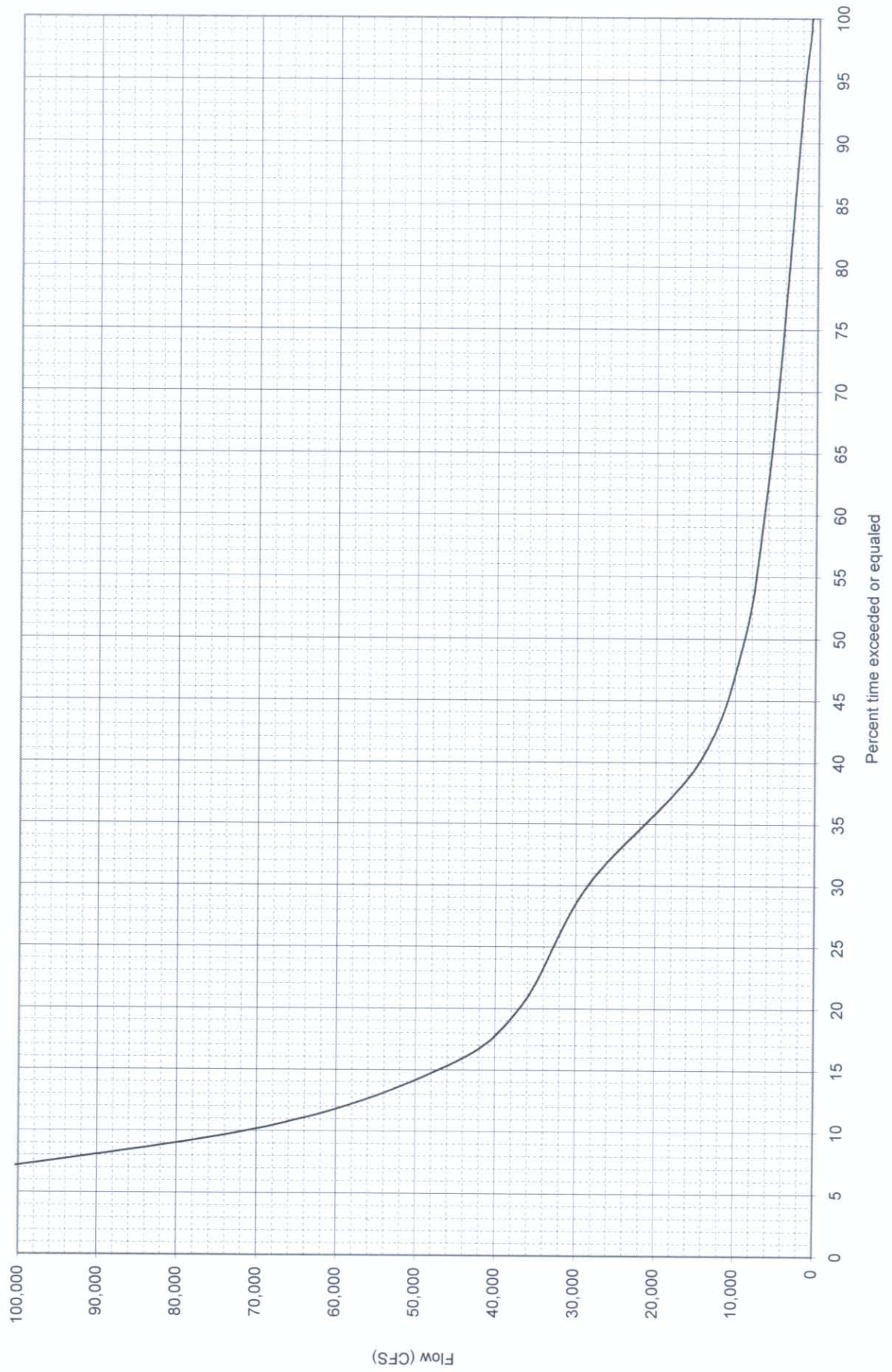
L&D 5 FLOW DURATION
Based on Super a96x01: POR 1940-1995
AUGUST



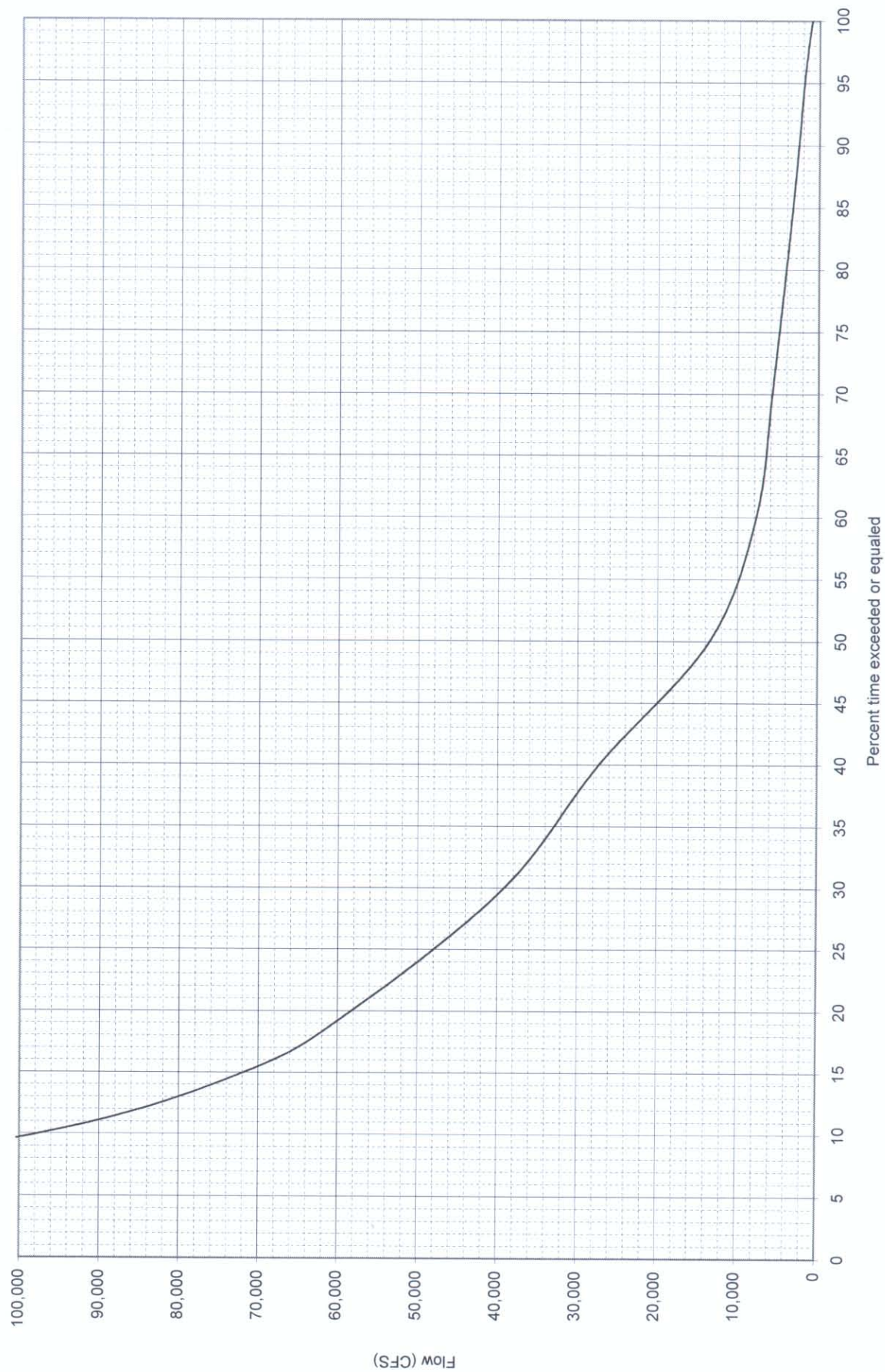
L&D 5 FLOW DURATION
Based on Super a96x01: POR 1940-1995
SEPTEMBER



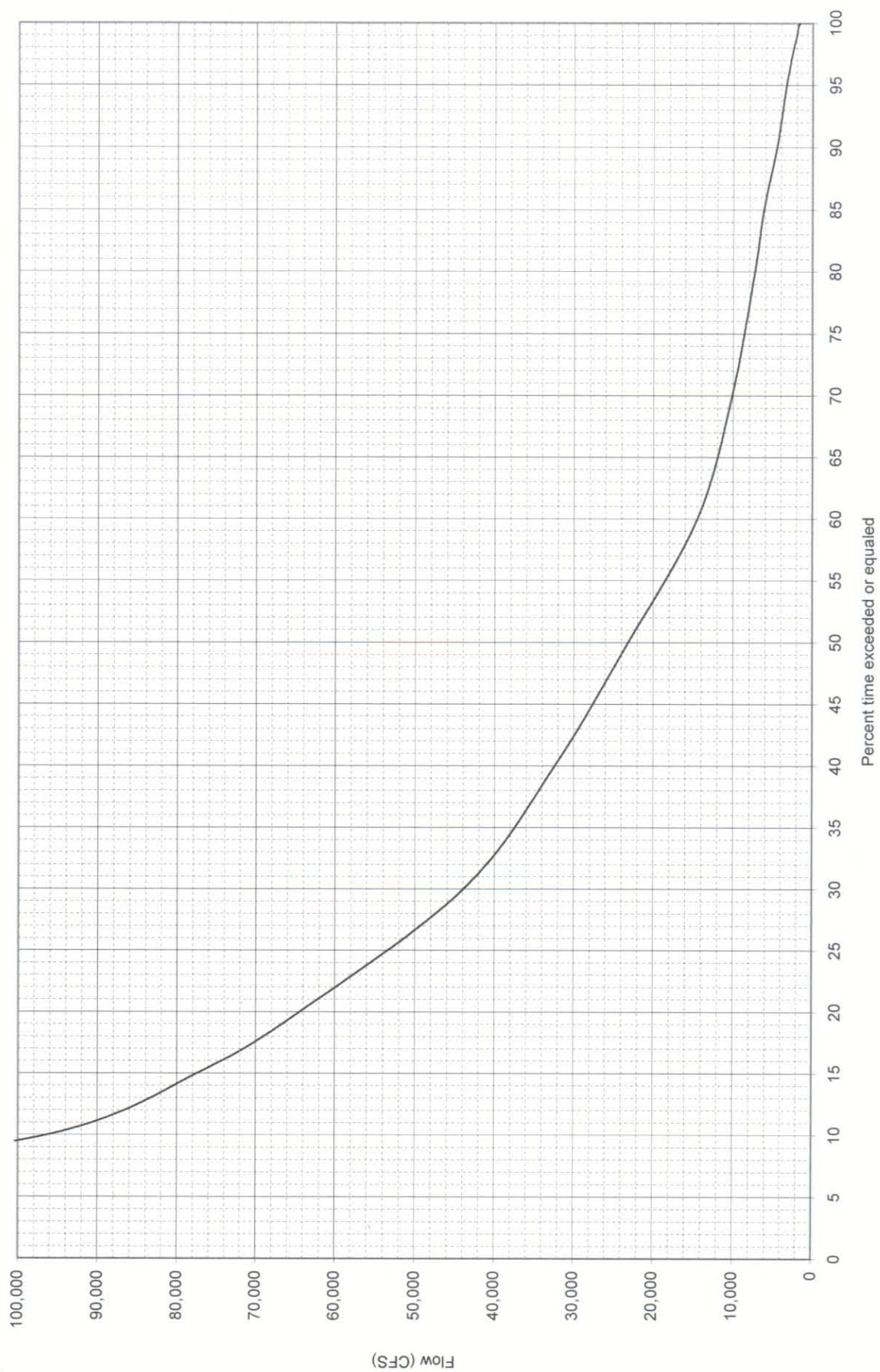
L&D 5 FLOW DURATION
Based on Super a96x01: POR 1940-1995
OCTOBER



L&D 5 FLOW DURATION
Based on Super a96x01: POR 1940-1995
NOVEMBER



L&D 5 FLOW DURATION
Based on Super a96x01: POR 1940-1995
DECEMBER



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SECTION 09965

PAINTING: HYDRAULIC STRUCTURES

PART 1 GENERAL

1.1 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by basic designation only.

AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI)

ANSI Z87.1 (2003) Occupational and Educational Eye and Face Protection

ANSI Z358.1 (2004) Emergency Eyewash and Shower Equipment

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

ASTM D 12 (1988; R 1998) Raw Tung Oil

ASTM D 153 (1984; R 1996el) Specific Gravity of Pigments

ASTM D 235 (1999) Mineral Spirits (Petroleum Spirits)
(Hydrocarbon Dry Cleaning Solvent)

ASTM D 281 (1995) Oil Absorption of Pigments by Spatula Rub-Out

ASTM D 304 (1995; R 1999) n-Butyl Alcohol (Butanol)

ASTM D 520 (2000) Zinc Dust Pigment

ASTM D 561 (1982; R 1996) Carbon Black Pigment for Paint

ASTM D 740 (1994; R 2001) Methyl Ethyl Ketone

ASTM D 841 (1997) Nitration Grade Toluene

ASTM D 962 (1981; R 1999) Aluminum Powder and Paste
Pigments for Paints

ASTM D 1045 (1995; R 2001) Sampling and Testing
Plasticizers Used in Plastics

ASTM D 1152 (1989; R 1997) Methanol (Methyl Alcohol)

ASTM D 1153 (1994; R 1997) Methyl Isobutyl Ketone

ASTM D 1186	(2001) Nondestructive Measurement of Dry Film Thickness of Nonmagnetic Coatings Applied to a Ferrous Base
ASTM D 1200	(1994; R 1999) Viscosity by Ford Viscosity Cup
ASTM D 1210	(1996) Fineness of Dispersion of Pigment-Vehicle Systems by Hegman-Type Gage
ASTM D 1308	(1987; R 1998) Effect of Household Chemicals on Clear and Pigmented Organic Finishes
ASTM D 1400	(2000) Nondestructive Measurement of Dry Film Thickness of Nonconductive Coatings Applied to a Nonferrous Metal Base
ASTM D 1475	(1998) Density of Paint, Varnish, Lacquer, and Related Products
ASTM D 1640	(1995; R 1999) Drying, Curing, or Film Formation of Organic Coatings at Room Temperature
ASTM D 2369	(2001) Volatile Content of Coatings
ASTM D 2917	(1991; R 1998) Methyl Isoamyl Ketone
ASTM D 3721	(1983; R 1999) Synthetic Red Iron Oxide Pigment
ASTM D 4206	(1996) Sustained Burning of Liquid Mixtures Using the Small Scale Open-Cup Apparatus
ASTM D 4417	(1993; R 1999) Field Measurement of Surface Profile of Blast Cleaned Steel
ASTM E 1347	(1997) Color and Color-Difference Measurement by Tristimulus (Filter) Colorimetry

CODE OF FEDERAL REGULATIONS (CFR)

29 CFR 1910	Occupational Safety and Health Standards
29 CFR 1910.20	Access to Employee Exposure and Medical Records
29 CFR 1910.94	Ventilation
29 CFR 1910.134	Respiratory Protection
29 CFR 1910.146	Permit-required Confined Spaces
29 CFR 1910, Subpart I	Personal Protective Equipment
29 CFR 1926	Safety and Health Regulations for Construction

29 CFR 1926.62	Lead
40 CFR 50.6	National Primary and Secondary Ambient Air Quality Standards for Particulate Matter
40 CFR 50.12	National Primary and Secondary Ambient Air Quality Standards for Lead
40 CFR 50, App B	Reference Method for the Determination of Suspended Particulate Matter in the Atmosphere
40 CFR 58, App E	Probe Siting Criteria for Ambient Air Quality Monitoring
40 CFR 60, App A, Mtd 22	Visual Determination of Fugitive Emissions from Material Sources and Smoke Emissions from Flares
40 CFR 117	Determination of Reportable Quantities for Hazardous Substances
40 CFR 122	EPA Administered Permit Programs: The National Pollutant Discharge Elimination System
40 CFR 261	Identification and Listing of Hazardous Waste
40 CFR 261, App III	Chemical Analysis Test Methods
40 CFR 261, App II, Mtd 1311	Toxicity Characteristic Leaching Procedure (TCLP)
40 CFR 262	Standards Applicable to Generators of Hazardous Waste
40 CFR 262.22	Number of Copies
40 CFR 263	Standards Applicable to Transporters of Hazardous Waste
40 CFR 302	Designation, Reportable Quantities, and Notification
40 CFR 355	Emergency Planning and Notification
49 CFR 171, Subchapter C	Hazardous Materials Regulations

COMMERCIAL ITEM DESCRIPTIONS (CID)

CID A-A-3130	Paint (For Application to Wet Surfaces)
CID A-A-3132	Coating System: Epoxy Primer/Urethane Topcoat, For Minimally Prepared Atmospheric Steel

CID A-A-50542

(Rev A) Coating System: Reflective, Slip-Resistant, Chemical-Resistant Urethane for Maintenance Facility Floors

ENGINEERING MANUALS (EM)

EM 385-1-1

(2003) U.S. Army Corps of Engineers Safety and Health Requirements Manual

FEDERAL STANDARDS (FED-STD)

FED-STD-595

(Rev B, Notice 1) Colors Used in Government Procurement

MILITARY SPECIFICATIONS (MS)

MS MIL-DTL-24441

(Rev C, Supplement 1) Paint, Epoxy-Polyamide, General Specification for

NATIONAL FIRE PROTECTION ASSOCIATION (NFPA)

NFPA 70

(2002) National Electrical Code

NATIONAL INSTITUTE FOR OCCUPATIONAL SAFETY AND HEALTH (NIOSH)

NIOSH Pub No. 98-119

(1998, 4th Ed., 2nd Supplement) NIOSH Manual of Analytical Methods

THE SOCIETY FOR PROTECTIVE COATINGS (SSPC)

SSPC Guide 6

(2004) Containing Debris Generated During Paint Removal Operations

SSPC QP 1

(2004) Standard Procedure for Evaluating Qualifications of Painting Contractors

SSPC QP 2

(2004) Standard Procedure for Evaluating the Qualifications of Painting Contractors to Remove Hazardous Paint

SSPC Paint 16

(2004) Coal Tar Epoxy-Polyamide Black (or Dark Red) Paint

SSPC Paint 20

(2004) Zinc-Rich Primers (Type I - "Inorganic" and Type II - "Organic")

SSPC Paint 25

(2004) Red Iron Oxide, Zinc Oxide, Raw Linseed Oil and Alkyd Primer (Without Lead and Chromate Pigments)

SSPC Paint 27

(2004) Basic Zinc Chromate-Vinyl Butyral Wash Primer

SSPC Paint 33

(2004) Coal Tar Mastic, Cold-Applied

SSPC PS 26.00

(2004) Aluminum-Pigmented Coating System for Steel Surfaces, Performance-Based

SSPC SP 1	(2004) Solvent Cleaning
SSPC SP 3	(2004) Power Tool Cleaning
SSPC SP 5/NACE 1	(2004) White Metal Blast Cleaning
SSPC SP 6/NACE 3	(2004) Commercial Blast Cleaning
SSPC SP 7/NACE 4	(2004) Brush-Off Blast Cleaning

1.2 LUMP SUM PRICE

1.2.1 Painting: Hydraulic Structures

1.2.1.1 Payment

Payment will be made for costs associated with "Painting: Hydraulic Structures", which includes full compensation for furnishing all materials, equipment, and labor required to paint the hydraulic structures in accordance with this section.

1.2.1.2 Unit of Measure

Unit of measure: lump sum.

1.3 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals having an "FIO" designation are for information only. The following shall be submitted in accordance with Section 01330 SUBMITTAL PROCEDURES:

SD-03 Product Data
Qualifications and Experience ; G

The Contractor shall submit certification pursuant to paragraph QUALIFICATIONS for all job sites. Submittal of the qualifications and experience of any additional qualified and competent persons employed to provide on-site environmental, safety, and health shall also be provided. Acceptance of this submission must be obtained prior to the submission of other required environmental, safety, and health submittal items.

Respiratory Protection Program ; G

The Contractor shall submit a comprehensive written respiratory protection program in accordance with 29 CFR 1910.134, 29 CFR 1926.62, and Section 05.E of EM 385-1-1.

Airborne Sampling Plan ; G

The contractor shall submit an Airborne Sampling Plan detailing the NIOSH Pub No. 98-119, Factory Mutual, or Underwriters Laboratories approved equipment, equipment calibration procedures, sampling methods, sampling to be performed, and analytical procedures to be used based on the type of work to be performed and anticipated toxic contaminants to be generated.

The contractor shall include the name of the accredited laboratory, listed by the American Industrial Hygiene Association (AIHA), to be used to conduct the analysis of any collected air samples.

Waste Classification, Handling, and Disposal Plan ; G

The contractor shall submit a Waste Classification, Handling, and Disposal Plan in accordance with the requirements of 40 CFR 261 and 40 CFR 262 and paragraph Waste Classification, Handling, and Disposal.

Containment Plan ; G

For all jobs where lead is present, the Contractor shall develop a plan for containing all lead contaminated waste. The containment shall comply with the requirements of SSPC Guide 6, Class 4.

Water Quality Plan ; G

For all job sites where lead-containing or other hazardous paint will be removed, the Contractor shall submit a Water Quality Plan. The plan shall include provisions for halting work if spills or emissions are observed entering into bodies of water or found in areas where storm water runoff could carry the debris into bodies of water or storm sewers. The plan shall also address cleanup and reporting procedures.

SD-04 Samples

Special Paint Formulas; G

Samples of special paint formulas, listed in paragraph PAINT FORMULATIONS, shall be submitted. For all vinyl-type paints submitted for laboratory testing, separate ½-pint samples of ingredient raw materials shall be furnished. The ingredient samples shall be clearly identified by commercial name, trade designation, manufacturer, batch or lot number, and such other data as may be required. For all epoxy type paints submitted for laboratory testing, a list of ingredient raw materials identifying commercial name, trade designation, manufacturer, batch or lot number, and such other data as may be required shall be furnished.

Specification and Proprietary Paints ; G

Federal, Military, Commercial Item Description, and SSPC: The Society for Protective Coatings specification paints are those formulated to meet federal, military, government and industry specifications. When the required quantity of any type is 190 L 50 gallons or less, the Contractor can submit:

a. A certified test report showing the results of required tests made on the material and a statement that it meets all of the specification requirements.

b. A certified test report showing the results of required tests made on a previous batch of paint produced by the same firm using the same ingredients and formulation except for minor differences necessitated by a color change and a statement that the previous batch met all of the specification requirements. A report of tests on the proposed batch showing the following properties applicable to the material specifications

shall be furnished: color, gloss, drying time, opacity, viscosity, weight per gallon, and fineness of grind.

c. A proprietary paint - When the required quantity of a particular type or color of a paint is 38 L 10 gallons or less, a proprietary, name-brand, shelf item paint of the same type and with sampling. Proprietary paints are any which do not follow the formulas in paragraph PAINT FORMULATIONS or the complete specification requirements of the government or industry specifications. To receive consideration, a statement from the supplier that the paint is appropriate as to type, color, and gloss and is a premium grade of paint shall be furnished.

Thinners ; G

Samples shall be submitted of the thinners which are those solvents used to reduce the viscosity of the paint.

SD-06 Test Reports Inspections and Operations; FIO

The Contractor shall document and submit records of inspections and operations performed. Submittals shall be made on a daily basis and shall include but are not limited to:

- a. Inspections performed, including the area of the structure involved and the results of the inspection.
- b. Surface preparation operations performed, including the area of the structure involved, the mode of preparation, the kinds of solvent, abrasive, or power tools employed, and whether contract requirements were met.
- c. Thinning operations performed, including thinners used, batch numbers, and thinner/paint volume ratios.
- d. Application operations performed, including the area of the structure involved, mode of application employed, ambient temperature, substrate temperature, dew point, relative humidity, type of paint with batch numbers, elapsed time for recoat, condition of underlying coat, number of coats applied, and if specified, measured dry film thickness or spreading rate of each new coating.

1.4 QUALIFICATIONS

Qualifications and experience shall comply with the following.

1.4.1 Certified Professional

The Contractor shall utilize a qualified and competent person as defined in Section 01 of EM 385-1-1 to develop the required safety and health submittal and to provide on-site safety and health services during the contract period. The person shall be a Certified Industrial Hygienist (CIH), an Industrial Hygienist (IH), or a Certified Safety Professional (CSP) with a minimum of 3 years of demonstrated experience in similar related work. The Contractor shall certify that the Certified Industrial Hygienist (CIH) holds current and valid certification from the American Board of Industrial Hygiene (ABIH), that the IH is considered board eligible by written

confirmation from the ABIH, or that the CSP holds current and valid certification from the American Board of Certified Safety Professionals. The CIH, IH, or CSP may utilize other qualified and competent persons, as defined in EM 385-1-1, to conduct on-site safety and health activities as long as these persons have a minimum of 2 years of demonstrated experience in similar related work and are under the direct supervision of the CIH, IH, or CSP. For lead containing jobsites, the competent and qualified person shall have successfully completed an EPA or state accredited lead-based paint abatement Supervisor course specific to the work to be performed and shall possess current and valid state and/or local government certification, as required.

1.4.2 Certified Laboratory

The Contractor shall provide documentation that includes the name, address, and telephone number of the laboratories to be providing services. In addition, the documentation shall indicate that each laboratory is an EPA National Lead Laboratory Accreditation Program (NLLAP) accredited laboratory and that each is rated proficient in the NIOSH/EPA Environmental Lead Proficiency Analytical Testing Program (ELPAT) and will document the date of current accreditation. Certification shall include accreditation for heavy metal analysis, list of experience relevant to analysis of lead in air, and a Quality Assurance and Quality Control Program.

1.5 SAMPLING AND TESTING

The Contractor shall allow at least 30 days for sampling and testing. Sampling may be at the jobsite or source of supply. The Contractor shall notify the Contracting Officer when the paint and thinner are available for sampling. Sampling of each batch shall be witnessed by the Contracting Officer unless otherwise specified or directed. A 1-quart sample of paint and thinner shall be submitted for each batch proposed for use. The sample shall be labeled to indicate formula or specification number and nomenclature, batch number, batch quantity, color, date made, and applicable project contract number. Testing will be performed by the Government. Costs for retesting rejected material will be deducted from payments to the Contractor at the rate of 200 dollars for each paint sample retested.

1.6 SAFETY AND HEALTH PROVISIONS

Work shall be performed in accordance with the requirements of 29 CFR 1910, 29 CFR 1926, EM 385-1-1, and other references as listed herein. Matters of interpretation of the standards shall be submitted to the Contracting Officer for resolution before starting work. Where the regulations conflict, the most stringent requirements shall apply. Paragraph SAFETY AND HEALTH PROVISIONS supplements the requirements of EM 385-1-1, paragraph (1). In any conflict between Section 01 of EM 385-1-1 and this paragraph, the provisions herein shall govern.

1.6.1 Abrasive Blasting

The Contractor shall comply with the requirements in Section 06.H of EM 385-1-1.

1.6.1.1 Hoses And Nozzles

In addition to the requirements in Section 20 of EM 385-1-1, hoses and hose connections of a type to prevent shock from static electricity shall be used. Hose lengths shall be joined together by approved couplings of a material and type designed to prevent erosion and weakening of the couplings. The couplings and nozzle attachments shall fit on the outside of the hose and shall be designed to prevent accidental disengagement.

1.6.1.2 Workers Other Than Blasters

Workers other than blasting operators working in close proximity to abrasive blasting operations shall be protected by utilizing MSHA/NIOSH-approved half-face or full-face air purifying respirators equipped with high-efficiency particulate air (HEPA) filters, eye protection meeting or exceeding ANSI Z87.1 and hearing protectors (ear plugs and/or ear muffs) providing a noise reduction rating of at least 20 dBA or as needed to provide adequate protection.

1.6.2 Cleaning with Compressed Air

Cleaning with compressed air shall be in accordance with Section 20.B.5 of EM 385-1-1 and personnel shall be protected as specified in 29 CFR 1910.134.

1.6.3 Cleaning with Solvents

1.6.3.1 Ventilation

Ventilation shall be provided where required by 29 CFR 1910.146 or where the concentration of solvent vapors exceeds 10 percent of the Lower Explosive Limit (LEL). Ventilation shall be in accordance with 29 CFR 1910.94, paragraph (c)(5).

1.6.3.2 Personal Protective Equipment

Personal protective equipment shall be provided where required by 29 CFR 1910.146 and in accordance with 29 CFR 1910, Subpart I.

1.6.4 Pretreatment of Metals and Concrete with Acids

1.6.4.1 Personal Protective Equipment

Personnel shall be protected in accordance with 29 CFR 1910, Subpart I.

1.6.4.2 Emergency Equipment

In addition to the requirements of Section 05 of EM 385-1-1, the Contractor shall provide an eyewash in accordance with ANSI Z358.1, paragraph (6).

1.6.5 Mixing Epoxy and Polyurethane Resin Formulations

1.6.5.1 Exhaust Ventilation

Local exhaust ventilation shall be provided in the area where the curing agent and resin are mixed. This ventilation system shall be capable of providing at least 100 linear fpm of capture velocity measured at the point where the curing agent and resin contact during mixing.

1.6.5.2 Personal Protective Equipment

Exposure of skin and eyes to epoxy resin components shall be avoided by wearing appropriate chemically resistant gloves, apron, safety goggles, and face shields meeting or exceeding the requirements of ANSI Z87.1.

1.6.5.3 Medical Precautions

Individuals who have a history of sensitivity to epoxy or polyurethane resin systems shall be medically evaluated before any exposure can occur. Individuals who are medically evaluated as exhibiting a sensitivity to epoxy resins shall not conduct work tasks or otherwise be exposed to such chemicals. Individuals who develop a sensitivity shall be immediately removed from further exposure and medically evaluated.

1.6.5.4 Emergency Equipment

A combination unit, comprised of an eyewash and deluge shower, within close proximity to the epoxy or polyurethane resin mixing operation shall be provided in accordance with ANSI Z358.1, paragraph (9).

1.6.6 Paint Application

1.6.6.1 Ventilation

When using solvent-based paint in confined spaces, ventilation shall be provided to exchange air in the space at a minimum rate of 5,000 cubic feet per minute per spray gun in operation. It may be necessary to install both a mechanical supply and exhaust ventilation system to effect adequate air changes within the confined space. All air-moving devices shall be located and affixed to an opening of the confined space in a manner that assures that the airflow is not restricted or short circuited and is supplied in the proper direction. Means of egress shall not be blocked. Ventilation shall be continued after completion of painting and through the drying phase of the operation. If the ventilation system fails or the concentration of volatiles exceeds 10 percent of the LEL (except in the zone immediately adjacent to the spray nozzle), painting shall be stopped and spaces evacuated until such time that adequate ventilation is provided. An audible alarm that signals system failure shall be an integral part of the ventilation system. The effectiveness of the ventilation shall be checked by using ventilation smoke tubes and making frequent oxygen and combustible gas readings during painting operations. Exhaust ducts shall discharge clear of the working areas and away from possible sources of ignition.

1.6.6.2 Explosion Proof Equipment

Electrical wiring, lights, and other equipment located in the paint spraying area shall be of the explosion proof type designed for operation in Class I, Division 1, Group D, hazardous locations as required by the NFPA 70. Electrical wiring, motors, and other equipment, outside of but within 20 feet of any spraying area, shall not spark and shall conform to the provisions for Class I, Division 2, Group D, hazardous locations. Electric motors used to drive exhaust fans shall not be placed inside spraying areas or ducts. Fan blades and portable air ducts shall be constructed of nonferrous materials. Motors and associated control equipment shall be properly maintained and grounded. The metallic parts of air-moving devices,

spray guns, connecting tubing, and duct work shall be electrically bonded and the bonded assembly shall be grounded.

1.6.6.3 Further Precautions

a. Workers shall wear nonsparking safety shoes.

b. Solvent drums taken into the spraying area shall be placed on nonferrous surfaces and shall be grounded. Metallic bonding shall be maintained between containers and drums when materials are being transferred.

c. Insulation on all power and lighting cables shall be inspected to ensure that the insulation is in excellent working condition and is free of all cracks and worn spots. Cables shall be further inspected to ensure that no connections are within 50 feet of the operation, that lines are not overloaded, and that they are suspended with sufficient slack to prevent undue stress or chafing.

1.6.6.4 Ignition Sources

Ignition sources, to include lighted cigarettes, cigars, pipes, matches, or cigarette lighters shall be prohibited in area of solvent cleaning, paint storage, paint mixing, or paint application.

1.6.7 Health Protection

1.6.7.2 Respirators

During all spray painting operations, spray painters shall use approved SCBA or SAR (air line) respirators, unless valid air sampling has demonstrated contaminant levels to be consistently within concentrations that are compatible with air-purifying respirator Assigned Protection Factor (APF). Persons with facial hair that interferes with the sealing surface of the facepiece to facepiece or interferes with respirator valve function shall not be allowed to perform work requiring respiratory protection. Air-purifying chemical cartridge/canister half- or full-facepiece respirators that have a particulate prefilter and are suitable for the specific type(s) of gas/vapor and particulate contaminant(s) may be used for nonconfined space painting, mixing, and cleaning (using solvents). These respirators may be used provided the measured or anticipated concentration of the contaminant(s) in the breathing zone of the exposed worker does not exceed the APF for the respirator and the gas/vapor has good warning properties or the respirator assembly is equipped with a NIOSH-approved end of service life indicator for the gas(es)/vapor anticipated or encountered. Where paint contains toxic elements such as lead, cadmium, chromium, or other toxic particulates that may become airborne during painting in nonconfined spaces, air-purifying half- and full-facepiece respirators or powered air-purifying respirators equipped with appropriate gas vapor cartridges, in combination with a high-efficiency filter, or an appropriate canister incorporating a high-efficiency filter, shall be used.

1.6.7.3 Protective Clothing and Equipment

All workers shall wear safety shoes or boots, appropriate gloves to protect against the chemical to be encountered, and breathable, protective, full-body covering during spray-painting applications. Where necessary for

emergencies, protective equipment such as life lines, body harnesses, or other means of personnel removal shall be used during confined-space work.

1.7 MEDICAL STATUS

Prior to the start of work and annually thereafter, all Contractor employees working with or around paint systems, thinners, blast media, those required to wear respiratory protective equipment, and those who will be exposed to high noise levels shall be medically evaluated for the particular type of exposure they may encounter. Medical records shall be maintained as required by 29 CFR 1910.20. The evaluation shall include:

a. Audiometric testing and evaluation of employees who will work in a noise environment with a time weighted average greater than or equal to 90 dBA.

b. Vision screening (employees who use full-facepiece respirators shall not wear contact lenses).

c. Medical evaluation shall include, but shall not be limited to, the following:

(1) Medical history including, but not limited to, alcohol use, with emphasis on liver, kidney, and pulmonary systems, and sensitivity to chemicals to be used on the job.

(2) General physical examination with emphasis on liver, kidney, and pulmonary system.

(3) Determination of the employee's physical and psychological ability to wear respiratory protective equipment and to perform job-related tasks.

(4) Determination of baseline values of biological indices for later comparison to changes associated with exposure to paint systems and thinners or blast media, which include: liver function tests to include SGOT, SGPT, GGPT, alkaline phosphates, bilirubin, complete urinalysis, EKG (employees over age 40), blood urea nitrogen (bun), serum creatinine, pulmonary function test, FVC, and FEV, chest x-ray (if medically indicated), blood lead and ZPP (for individuals where it is known there will be an exposure to materials containing lead), other criteria that may be deemed necessary by the Contractor's physician, and Physician's statements for individual employees that medical status would permit specific task performance.

(5) For lead-based paint removal, the medical requirements of 29 CFR 1926.62 shall also be included.

1.8 CHANGE IN MEDICAL STATUS

Any employee whose medical status has changed negatively due to work related chemical and/or physical agent exposure while working with or around paint systems and thinners, blast media, or other chemicals shall be evaluated by a physician, and the Contractor shall obtain a physicians statement as described in paragraph MEDICAL STATUS prior to allowing the employee to return to those work tasks. The Contractor shall notify the Contracting

Officer in writing of any negative changes in employee medical status and the results of the physicians reevaluation statement.

1.9 ENVIRONMENTAL PROTECTION

In addition to the requirements of section 01354 the Contractor shall comply with the following environmental protection criteria.

1.9.1 Waste Classification, Handling, and Disposal

The Contractor shall be responsible for assuring the proper disposal of all hazardous and nonhazardous waste generated during the project. Waste generated from lead-containing paints shall be disposed of as a hazardous waste or shall be stabilized with proprietary additives regardless of the results of 40 CFR 261, App II, Mtd 1311. Hazardous waste shall be placed in properly labeled closed containers and shall be shielded adequately to prevent dispersion of the waste by wind or water. Any evidence of improper storage shall be cause for immediate shutdown of the project until corrective action is taken. Nonhazardous waste shall be stored in closed containers separate from hazardous waste storage areas. All hazardous waste shall be transported by a licensed transporter in accordance with 40 CFR 263 and 49 CFR 171, Subchapter C. All nonhazardous waste shall be transported in accordance with local regulations regarding waste transportation. In addition to the number of manifest copies required by 40 CFR 262.22, one copy of each manifest will be supplied to the Contracting Officer prior to transportation.

1.9.2 ~~Containment~~Water Quality

~~The Contractor shall contain debris generated during paint removal operations in accordance with the requirements of SSPC Guide 3.~~ Amend 0002
~~The Contractor shall conduct operations in such a manner that lead-containing and other hazardous paint debris do not contaminate the water and so that NPDES permits per EPA regulation 40 CFR 122 are not required for the project. In the event that there are any releases of lead paint debris into the waterways, with reportable quantities of hazardous substances designated pursuant to Section 311 of the Clean Water Act, they shall be reported to the EPA in accordance with 40 CFR 117 and 40 CFR 355. Releases or spills that carry into waterways or storm sewers shall be thoroughly documented. The documentation shall include the time and location of the release, amount of material released, actions taken to clean up the debris, amount of debris recovered, and corrective action taken to avoid a reoccurrence. Releases shall also be reported to the Coast Guard and other state and local authorities as appropriate. If the release is equivalent to 4.5 kg (10 pounds) or more of lead-containing material in a 24-hour period, it is considered to be a reportable quantity under CERCLA. The Contractor shall comply with 40 CFR 302.~~

1.10 PAINT PACKAGING, DELIVERY, AND STORAGE

Paints shall be processed and packaged to ensure that within a period of one year from date of manufacture, they will not gel, liver, or thicken deleteriously, or form gas in the closed container. Paints, unless otherwise specified or permitted, shall be packaged in standard containers not larger than 5 gallons, with removable friction or lug-type covers. Containers for vinyl-type paints shall be lined with a coating resistant to

solvents in the formulations and capable of effectively isolating the paint from contact with the metal container. Each container of paint or separately packaged component thereof shall be labeled to indicate the purchaser's order number, date of manufacture, manufacturer's batch number, quantity, color, component identification and designated name, and formula or specification number of the paint together with special labeling instructions, when specified. Paint shall be delivered to the job in unbroken containers. Paints that can be harmed by exposure to cold weather shall be stored in ventilated, heated shelters. All paints shall be stored under cover from the elements and in locations free from sparks and flames.

PART 2 PRODUCTS

2.1 SPECIAL PAINT FORMULAS

Special paints shall have the composition as indicated in the formulas listed herein. Where so specified, certain components of a paint formulation shall be packaged in separate containers for mixing on the job. If not specified or otherwise prescribed, the color shall be that naturally obtained from the required pigmentation.

2.2 PAINT FORMULATIONS

Special paint formulas shall comply with the following:

2.2.3 Formula V-766e, Vinyl-Type White (or Gray) Impacted Immersion Coating

INGREDIENTS	PERCENT BY MASS
Vinyl Resin, Type 3	5.6
Vinyl Resin, Type 4	11.6
Titanium Dioxide and (for Gray)	
Carbon Black	13.0
Diisodecyl Phthalate	2.9
Methyl Isobutyl Ketone	32.0
Toluene	34.7
Ortho-Phosphoric Acid	0.2
	<hr/> 100.0

a. The dispersion of pigment shall be accomplished by means of pebble mills or other approved methods to produce a fineness of grind (ASTM D 1210) of not less than 7 on the Hegman scale. Grinding in steel-lined or steel-ball mills will not be permitted. No grinding aids, antissettling agents, or any other materials except those shown in the formula will be permitted. The paint shall show the proper proportions of specified materials when analyzed by chromatographic and/or spectrophotometric methods. The ortho-phosphoric acid shall be measured accurately and diluted with at least four parts of ketone to one part of acid and it shall be slowly incorporated into the finished paint with constant and thorough agitation.

b. The viscosity of the paint shall be between 60 and 90 seconds using ASTM D 1200 and a No. 4 Ford cup.

c. The white and gray paints shall be furnished in the volume ratio designated by the purchaser. The gray paint shall contain no pigments

other than those specified. Enough carbon black shall be included to produce a dry paint film having a reflectance of 20-24 (ASTM E 1347). The resulting gray color shall approximate color 26231 of FED-STD-595.

2.2.4 Formula VZ-108d, Vinyl-Type Zinc-Rich Impacted Immersion Coating

INGREDIENTS	PERCENT BY WEIGHT	POUNDS	GALLONS
COMPONENT A			
Vinyl Resin, Type 3	16.6	109.2	9.65
Methyl Isobutyl Ketone	80.6	528.9	79.30
Suspending Agent E	0.7	4.6	0.28
Suspending Agent F	0.4	2.7	0.19
Methanol	0.5	3.3	0.50
Synthetic Iron Oxide (Red)	1.2	7.9	0.19
	<hr/> 100.0	<hr/> 656.6	<hr/> 90.11
COMPONENT B			
Silane B	100.0	4.1	0.47
COMPONENT C			
Zinc Dust	100.0	550.0	9.42
			<hr/> 100.00
			(mixed paint)

a. The iron oxide and suspending agents shall be dispersed into the vehicle (Component A) to a fineness of grind of not less than 4 on the Hegman scale (ASTM D 1210). Grinding in steel-lined containers or using steel-grinding media shall not be permitted. The sole purpose of the iron oxide pigment is to produce a contrasting color. A red iron oxide-type 3 vinyl resin vehicle paste may be used in place of dry iron oxide provided compensating adjustment are made in the additions of Type 3 resin and methyl isobutyl ketone. The finished product with zinc dust added shall produce a paint which has a red tone upon drying and a reflectance of not more than 16 (ASTM E 1347).

b. VZ-108d paint shall be supplied as a kit. Each kit shall consist of 4.5 gallons (33.1 pounds) of Component A in a 5-gallon lug closure type pail, 27.5 pounds of zinc dust (Component C) packaged in a 1-gallon plastic pail, and 3 fluid ounces of silane (Component B) packaged in a glass bottle of suitable size having a polyethylene lined cap. The bottle of silane shall be placed on the zinc dust in the 1 gallon pail. In addition to standard labeling requirements, each container of each component shall be properly identified as to component type and each container label of Component A shall carry the following: MIXING AND APPLICATION INSTRUCTIONS: WARNING - THIS PAINT WILL NOT ADHERE TO STEEL SURFACES UNLESS COMPONENT B IS ADDED. Remove the 3 ounces of bottled Component B (silane) from the Component C (zinc dust) container and add to the base paint Component A) with thorough stirring. Then sift the zinc dust into the base paint while it is being vigorously agitated with a power-driven stirrer and continue the

stirring until the zinc dust has been dispersed. The mixed paint shall at some point be strained through a 30-60 mesh screen to prevent zinc dust slugs from reaching the spray gun nozzle. The paint shall be stirred continuously during application at a rate that will prevent settling. If spraying is interrupted for longer than 15 minutes, the entire length of the hose shall be whipped vigorously to redisperse the zinc. If the spraying is to be interrupted for more than 1 hour, the hose shall be emptied by blowing the paint back into the paint pot. Thinning will not normally be required when ambient temperatures are below about 80 degrees F, but when the ambient and steel temperatures are higher, methyl isoamyl ketone (MIAK) or methyl isobutyl ketone (MIBK) should be used. If paint is kept covered at all times, its pot life will be about 8 days.

2.2.5 Formula C-200a, Coal Tar-Epoxy (Black) Paint

The paint shall conform to SSPC Paint 16 manufactured with Type 1 pitch. In addition to standard labeling, container labels shall include the term, Corps of Engineers Formula C-200a.

2.3 INGREDIENTS FOR SPECIAL PAINT FORMULAS

The following ingredient materials and thinners apply only to those special paints whose formulas are shown above in detail.

2.3.1 Pigments and Suspending Agents

2.3.1.1 Aluminum Powder

For vinyl paint aluminum powder shall conform to ASTM D 962, Type 1, Class B.

2.3.1.2 Carbon Black

Carbon black shall conform to ASTM D 561, Type I or II.

2.3.1.3 Zinc Dust

Zinc dust pigment shall conform to ASTM D 520, Type II.

2.3.1.4 Iron Oxide

Iron oxide, (Dry) synthetic (red), shall conform to ASTM D 3721. In addition, the pigment shall have a maximum oil absorption of 24 and a specific gravity of 4.90 to 5.20 when tested in accordance with ASTM D 281 and ASTM D 153, Method A, respectively. When the pigment is dispersed into specified vinyl paint formulation, the paint shall have color approximating FED-STD-595 color 10076 (dark red paint), and shall show no evidence of incompatibility or reaction between pigment and other components after 6 months storage.

2.3.1.5 Titanium Dioxide

Titanium dioxide in vinyl paint Formula V-766e shall be one of the following: Kronos 2160 or 2101, Kronos, Inc.; Ti-Pure 960, E.I. Dupont DeNemours and Co., Inc.

2.3.1.6 Suspending Agent E

Suspending Agent E shall be a light cream colored finely divided powder having a specific gravity of 2 to 2.3. It shall be an organic derivative of magnesium aluminum silicate mineral capable of minimizing the tendency of zinc dust to settle hard without increasing the viscosity of the paint appreciably. MPA-14, produced by RHEOX, Inc., has these properties.

2.3.1.7 Suspending Agent F

Suspending Agent F shall be a light cream colored finely divided powder having a specific gravity of approximately 1.8. It shall be an organic derivative of a special montmorillonite (trialkylaryl ammonium hectorite). Bentone 27, produced by RHEOX, Inc., has these properties.

2.3.2 Resins, Plasticizer, and Catalyst

2.3.2.1 Diisodecyl Phthalate

Diisodecyl Phthalate shall have a purity of not less than 99.0 percent, shall contain not more than 0.1 percent water, and shall have an acid number (ASTM D 1045) of not more than 0.10.

2.3.2.2 Vinyl Resin, Type 3

Vinyl resin, Type 3, shall be a vinyl chloride-acetate copolymer of medium average molecular weight produced by a solution polymerization process and shall contain 85 to 88 percent vinyl chloride and 12 to 15 percent vinyl acetate by weight. The resin shall have film-forming properties and shall, in specified formulations, produce results equal to Vinylite resin VYHH, as manufactured by the Union Carbide Corporation.

2.3.2.3 Vinyl Resin, Type 4

Vinyl resin, Type 4, shall be a copolymer of the vinyl chloride-acetate type produced by a solution polymerization process, shall contain (by weight) 1 percent interpolymerized dibasic acid, 84 to 87 percent vinyl chloride, and 12 to 15 percent vinyl acetate. The resin shall have film-forming properties and shall, in the specified formulations, produce results equal to Vinylite resin VMCH, as manufactured by the Union Carbide Corporation.

2.3.2.4 Ortho-phosphoric Acid

Ortho-phosphoric acid shall be a chemically pure 85-percent grade.

2.3.3 Solvent and Thinners

2.3.3.1 Methanol

Methanol (methyl alcohol) shall conform to ASTM D 1152.

2.3.3.2 Methyl Isobutyl Ketone

Methyl isobutyl ketone (MIBK) shall conform to ASTM D 1153.

2.3.3.3 Toluene

Toluene shall conform to ASTM D 841.

2.3.4 Silane B

Silane B for Formula VZ-108d shall be N-beta-(aminoethyl)-gamma-aminopropyltrimethoxy silane. Silane A-1120, produced by the C.K. Witco Corporation, and Silane Z-6020, produced by Dow Corning Corporation, are products of this type.

2.4 TESTING

2.4.1 Chromatographic Analysis

Solvents in vinyl paints and thinners shall be subject to analysis by programmed temperature gas chromatographic methods and/or spectrophotometric methods, employing the same techniques that give reproducible results on prepared control samples known to meet the specifications. If the solvent being analyzed is of the type consisting primarily of a single chemical compound or a mixture of two or more such solvents, interpretation of the test results shall take cognizance of the degree of purity of the individual solvents as commercially produced for the paint industry.

2.4.2 Vinyl Paints

Vinyl paints shall be subject to the following adhesion test. When V-766 or V-106 formulations are tested, 5 to 7 mils (dry) shall be spray applied to mild steel panels. The steel panels shall be essentially free of oil or other contaminants that may interfere with coating adhesion. The test panels shall be dry blast cleaned to a White Metal grade which shall be in compliance with SSPC SP 5/NACE 1. The surface shall have an angular profile of 2.0 to 2.5 mils as measured by ASTM D 4417, Method C. When V-102 or V-103 formulations are tested, they shall be spray applied over 1.5 to 2.5 mils (dry) of V-766 or V-106 known to pass this test. When VZ-108 is tested, the coating shall be mixed in its proper proportions and then spray applied to a dry film thickness of 1.5 to 2.5 mils above the blast profile. The VZ-108 shall be top coated with a V-766 known to pass this test. In all cases, the complete system shall have a total dry film thickness of 5 to 7 mils above the blast profile. After being air dried for 2 hours at room temperature, the panel shall be dried in a vertical position for 16 hours at 120 degrees F. After cooling for 1 hour, the panel shall be immersed in tap water at 85 to 90 degrees F for 48 to 72 hours. Immediately upon removal, the panel shall be dried with soft cloth and examined for adhesion as follows: With a pocket knife or other suitable instrument, two parallel cuts at least 1 inch long shall be made 1/4 to 3/8 inch apart through the paint film to the steel surface. A third cut shall be made perpendicular to and passing through the end of the first two. With the tip of the knife blade, the film shall be loosened from the panel from the third cut between the parallel cuts for a distance of 1/8 to 1/4 inch. With the panel being held horizontally, the free end of the paint film shall be grasped between the thumb and forefinger and pulled vertically in an attempt to remove the film as a strip from between the first two cuts. The strip of paint film shall be removed at a rate of approximately 1/10 inch per second and shall

be maintained in a vertical position during the process of removal. The adhesion is acceptable if the strip of paint breaks when pulled or if the strip elongates a minimum of 10 percent during its removal. Paints not intended to be self-priming shall exhibit no delamination from the primer.

PART 3 EXECUTION

3.1 CLEANING AND PREPARATION OF SURFACES TO BE PAINTED

3.1.1 General Requirements

Surfaces to be painted shall be cleaned before applying paint or surface treatments. Deposits of grease or oil shall be removed in accordance with SSPC SP 1, prior to mechanical cleaning. Solvent cleaning shall be accomplished with mineral spirits or other low toxicity solvents having a flash point above 100 degrees F. Clean cloths and clean fluids shall be used to avoid leaving a thin film of greasy residue on the surfaces being cleaned. Items not to be prepared or coated shall be protected from damage by the surface preparation methods. Machinery shall be protected against entry of blast abrasive and dust into working parts. Cleaning and painting shall be so programmed that dust or other contaminants from the cleaning process do not fall on wet, newly painted surfaces, and surfaces not intended to be painted shall be suitably protected from the effects of cleaning and painting operations. Welding of, or in the vicinity of, previously painted surfaces shall be conducted in a manner to prevent weld spatter from striking the paint and to otherwise reduce coating damage to a minimum; paint damaged by welding operations shall be restored to original condition. Surfaces to be painted that will be inaccessible after construction, erection, or installation operations are completed shall be painted before they become inaccessible.

3.1.2 Ferrous Surfaces Subject to Atmospheric Exposures

Ferrous surfaces that are to be continuously in exterior or interior atmospheric exposure and other surfaces as directed shall be cleaned by means of power tools or by dry blasting to the brush-off grade. Cleaning and priming shall be done in the shop unless otherwise directed or permitted. Power tool cleaning shall conform to the requirements of SSPC SP 3. Brush-off blast cleaning shall conform to the requirements of SSPC SP 7/NACE 4. Welds and adjoining surfaces within a few inches thereof shall be cleaned of weld flux, spatter, and other harmful deposits by blasting, power impact tools, power wire brush, or such combination of these and other methods as may be necessary for complete removal of each type of deposit. The combination of cleaning methods need not include blasting when preparation of the overall surfaces is carried out by the power tool method. However, brush scrubbing and rinsing with clean water, after mechanical cleaning is completed, will be required unless the latter is carried out with thoroughness to remove all soluble alkaline deposits. Wetting of the surfaces during water-washing operations shall be limited to the weld area required to be treated, and such areas shall be dry before painting. Welds and adjacent surfaces cleaned thoroughly by blasting alone will be considered adequately prepared provided that weld spatter not dislodged by the blast stream shall be removed with impact or grinding tools. All surfaces shall be primed as soon as practicable after cleaning but prior to

contamination or deterioration of the prepared surfaces. To the greatest degree possible, steel surfaces shall be cleaned (and primed) prior to lengthy outdoor storage.

3.1.3 Ferrous Surfaces to be Painted with Vinyl or Coal Tar Epoxy

Ferrous surfaces subject to be painted with vinyl or coal tar epoxy shall be dry blast-cleaned to SSPC SP 5. The blast profile, unless otherwise specified, shall be 1.5 to 2.5 mils as measured by ASTM D 4417, Method C. Appropriate abrasive blast media shall be used to produce the desired surface profile and to give an angular anchor tooth pattern. If recycled blast media is used, an appropriate particle size distribution shall be maintained so that the specified profile is consistently obtained. Steel shot or other abrasives that do not produce an angular profile shall not be used. Weld spatter not dislodged by blasting shall be removed with impact or grinding tools and the areas reblasted prior to painting. Surfaces shall be dry at the time of blasting. Blast cleaning to SSPC SP 5 shall be done in the field and, unless otherwise specifically authorized, after final erection. Within 8 hours after cleaning, prior to the deposition of any detectable moisture, contaminants, or corrosion, all ferrous surfaces blast cleaned to SSPC SP 5 shall be cleaned of dust and abrasive particles by brush, vacuum cleaner, and/or blown down with clean, dry, compressed air, and given the first coat of paint.

3.1.4 Lead-Based Paint Test (LBP)

Test for LBP was conducted on this project. Paint test sample location and the analyses of the test results are listed in paragraph 3.5.

3.2 PAINT APPLICATION

3.2.1 General

The finished coating shall be free from holidays, pinholes, bubbles, runs, drops, ridges, waves, laps, excessive or unsightly brush marks, and variations in color, texture, and gloss. Application of initial or subsequent coatings shall not commence until the Contracting Officer has verified that atmospheric conditions and the surfaces to be coated are satisfactory. Each paint coat shall be applied in a manner that will produce an even, continuous film of uniform thickness. Edges, corners, crevices, seams, joints, welds, rivets, corrosion pits, and other surface irregularities shall receive special attention to ensure that they receive an adequate thickness of paint. Spray equipment shall be equipped with traps and separators and where appropriate, mechanical agitators, pressure gauges, pressure regulators, and screens or filters. Air caps, nozzles, and needles shall be as recommended by the spray equipment manufacturer for the material being applied. Airless-type spray equipment may be used only on broad, flat, or otherwise simply configured surfaces, except that it may be employed for general painting if the spray gun is equipped with dual or adjustable tips of proper types and orifice sizes. Airless-type equipment shall not be used for the application of vinyl paints.

3.2.2 Mixing and Thinning

Paints shall be thoroughly mixed, strained where necessary, and kept at a uniform composition and consistency during application. Paste or dry-powder pigments specified to be added at the time of use shall, with the aid of

powered stirrers, be incorporated into the vehicle or base paint in a manner that will produce a smooth, homogeneous mixture free of lumps and dry particles. Where necessary to suit conditions of the surface temperature, weather, and method of application, the paint may be thinned immediately prior to use. Thinning shall generally be limited to the addition of not more than 1 pint per gallon of the proper thinner; this general limitation shall not apply when more specific thinning instructions are provided. Paint that has been stored at low temperature, shall be brought up to at least 70 degrees F before being mixed and thinned, and its temperature in the spray tank or other working container shall not fall below 60 degrees F during the application. Paint that has deteriorated in any manner to a degree that it cannot be restored to essentially its original condition by customary field-mixing methods shall not be used and shall be removed from the project site. Paint and thinner that is more than 1 year old shall be resampled and resubmitted for testing to determine its suitability for application.

3.2.3 Atmospheric and Surface Conditions

Paint shall be applied only to surfaces that are above the dew point temperature and that are completely free of moisture as determined by sight and touch. Paint shall not be applied to surfaces upon which there is detectable frost or ice. Except as otherwise specified, the temperature of the surfaces to be painted and of air in contact therewith shall be not less than 45 degrees F during paint application nor shall paint be applied if the surfaces can be expected to drop to 32 degrees F or lower before the film has dried to a reasonably firm condition. During periods of inclement weather, painting may be continued by enclosing the surfaces and applying artificial heat, provided the minimum temperatures and surface dryness requirements prescribed previously are maintained. Paint shall not be applied to surfaces heated by direct sunlight or other sources to temperatures that will cause detrimental blistering, pinholing, or porosity of the film.

3.2.4 Time Between Surface Preparation and Painting

Surfaces that have been cleaned and/or otherwise prepared for painting shall be primed as soon as practicable after such preparation has been completed but, in any event, prior to any deterioration of the prepared surface.

3.2.5 Method of Paint Application

Unless otherwise specified, paint shall be applied by brush or spray to ferrous and nonferrous metal surfaces. Special attention shall be directed toward ensuring adequate coverage of edges, corners, crevices, pits, rivets, bolts, welds, and similar surface irregularities. Other methods of application to metal surfaces shall be subject to the specific approval of the Contracting Officer. Paint on plaster, concrete, or other nonmetallic surfaces shall be applied by brush, roller, and/or spray.

3.2.6 Coverage and Film Thickness

Film thickness or spreading rates shall be as specified hereinafter. Where no spreading rate is specified, the paint shall be applied at a rate normal for the type of material being used. In any event, the combined coats of a specified paint system shall completely hide base surface and the finish coats shall completely hide undercoats of dissimilar color.

3.2.6.1 Measurement on Ferrous Metal

Where dry film thickness requirements are specified for coatings on ferrous surfaces, measurements shall be made with a gage qualified in accordance with paragraph Coating Thickness Gage Qualification. They shall be calibrated and used in accordance with ASTM D 1186. They shall be calibrated using plastic shims with metal practically identical in composition and surface preparation to that being coated, and of substantially the same thickness (except that for measurements on metal thicker than 1/4 inch, the instrument may be calibrated on metal with a minimum thickness of 1/4 inch). Frequency of measurements shall be as recommended for field measurements by ASTM D 1186 and reported as the mean for each spot determination. The instruments shall be calibrated or calibration verified prior to, during, and after each use.

3.2.7 Progress of Painting Work

Where field painting on any type of surface has commenced, the complete painting operation, including priming and finishing coats, on that portion of the work shall be completed as soon as practicable, without prolonged delays. Sufficient time shall elapse between successive coats to permit them to dry properly for recoating, and this period shall be modified as necessary to suit adverse weather conditions. Paint shall be considered dry for recoating when it feels firm, does not deform or feel sticky under moderate pressure of the finger, and the application of another coat of paint does not cause film irregularities such as lifting or loss of adhesion of the undercoat. All coats of all painted surfaces shall be unscarred and completely integral at the time of application of succeeding coats. At the time of application of each successive coat, undercoats shall be cleaned of dust, grease, overspray, or foreign matter by means of airblast, solvent cleaning, or other suitable means. Cement and mortar deposits on painted steel surfaces, not satisfactorily removed by ordinary cleaning methods, shall be brush-off blast cleaned and completely repainted as required. Undercoats of high gloss shall, if necessary for establishment of good adhesion, be scuff sanded, solvent wiped, or otherwise treated prior to application of a succeeding coat. Field coats on metal shall be applied after erection except as otherwise specified and except for surfaces to be painted that will become inaccessible after erection.

3.2.8 Contacting Surfaces

When riveted or ordinary bolted contact is to exist between surfaces of ferrous or other metal parts of substantially similar chemical composition, such surfaces will not be required to be painted, but any resulting crevices shall subsequently be filled or sealed with paint. Contacting metal surfaces formed by high-strength bolts in friction-type connections shall not be painted. Where a nonmetal surface is to be in riveted or bolted contact with a metal surface, the contacting surfaces of the metal shall be cleaned and given three coats of the specified primer. Unless otherwise specified, corrosion-resisting metal surfaces, including cladding therewith, shall not be painted.

3.2.9 Drying Time Prior to Immersion

Minimum drying periods after final coat prior to immersion shall be: epoxy systems at least 5 days, vinyl-type paint systems at least 3 days, and cold-

applied coal tar systems at least 7 days. Minimum drying periods shall be increased twofold if the drying temperature is below 65 degrees F and/or if the immersion exposure involves considerable abrasion.

3.2.10 Protection of Painted Surfaces

Where shelter and/or heat are provided for painted surfaces during inclement weather, such protective measures shall be maintained until the paint film has dried and discontinuance of the measures is authorized. Items that have been painted shall not be handled, worked on, or otherwise disturbed until the paint coat is fully dry and hard. All metalwork coated in the shop or field prior to final erection shall be stored out of contact with the ground in a manner and location that will minimize the formation of water-holding pockets; soiling, contamination, and deterioration of the paint film, and damaged areas of paint on such metalwork shall be cleaned and touched up without delay. The first field coat of paint shall be applied within a reasonable period of time after the shop coat and in any event before weathering of the shop coat becomes extensive.

3.2.11 Vinyl Paints

3.2.11.1 General

Vinyl paints shall be spray applied, except that areas inaccessible to spraying shall be brushed. All of the vinyl paints require thinning for spray application except the zinc-rich vinyl paint (Formula VZ 108d) which will normally require thinning only under certain weather conditions. Thinners for vinyl paints shall be as follows:

APPROXIMATE AMBIENT AIR TEMPERATURE(Degrees F)	
Below 50	MEK
50 - 70	MIBK
Above 70	MIAC

The amount of thinner shall be varied to provide a wet spray and avoid deposition of particles that are semidry when they strike the surface. Vinyl paints shall not be applied when the temperature of the ambient air and receiving surfaces is less than 35 degrees F nor when the receiving surfaces are higher than 125 degrees F. Each spray coat of vinyl paint shall consist of a preliminary extra spray pass on edges, corners, interior angles, pits, seams, crevices, junctions of joining members, rivets, weld lines, and similar surface irregularities followed by an overall double spray coat. A double spray coat of vinyl-type paint shall consist of applying paint to a working area of not less than several hundred square feet in a single, half-lapped pass, followed after drying to at least a near tack-free condition by another spray pass applied at the same coverage rate and where practicable at right angles to the first. Rivets, bolts, and similar surface projections shall receive sprayed paint from every direction to ensure complete coverage of all faces. Pits, cracks, and crevices shall be filled with paint insofar as practicable, but in any event, all pit surfaces shall be thoroughly covered and all cracks and crevices shall be sealed off against the entrance of moisture. Fluid and atomization pressures shall be kept as low as practicable consistent with good spraying results. Unless otherwise specified, not more than 2.0 mils, average dry film thickness, of vinyl paint shall be applied per double spray coat. Except where otherwise indicated, an undercoat of the vinyl-type paint may

receive the next coat any time after the undercoat is tack-free and firm to the touch, provided that no speedup or delay in the recoating schedule shall cause film defects such as sags, runs, air bubbles, air craters, or poor intercoat adhesion. Neither the prime coat nor any other coat shall be walked upon or be subjected to any other abrading action until it has hardened sufficiently to resist mechanical damage.

3.2.11.2 Vinyl Zinc-Rich Primer

Primer shall be field mixed combining components A, B, and C. Mixing shall be in accordance with label instructions. After mixing, the paint shall be kept covered at all times to avoid contamination and shall be applied within 8 days after it is mixed. When the ambient and/or steel temperature is below about 80 degrees F, the paint will not normally require thinning; however, the paint shall at all times contain sufficient volatiles (thinners) to permit it to be satisfactorily atomized and to provide a wet spray and to avoid deposition of particles that are semidry when they reach the surface. The paint shall be stirred continuously during application at a rate that will prevent the zinc dust from settling. When spraying is resumed after any interruption of longer than 15 minutes, the entire length of the material hose shall be whipped vigorously until any settled zinc is redispersed. Long periods of permitting the paint to remain stagnant in the hose shall be avoided by emptying the hoses whenever the painting operation is to be suspended for more than 1 hour. The material (paint) hoses shall be kept as short as practicable, preferably not more than 50 feet in length. Equipment used for spraying this zinc primer shall not be used for spraying other vinyl-type paints without first being thoroughly cleaned, since many of the other paints will not tolerate zinc contamination; no type of hot spray shall be used. An average dry film thickness of up to 2.5 mils may be applied in one double-spray coat. Unless specifically authorized, not more than 8 days shall elapse after application of a VZ-108d zinc-rich coat before it receives a succeeding coat.

3.2.11.3 Vinyl Paints

Vinyl Paints (Formulas V-102e, V-103c, V-106d, and V-766e) are ready-mixed paints designed to be spray applied over a wide range of ambient temperatures by field thinning with the proper type and amount of thinner. For spray application, they shall be thinned as necessary up to approximately 25 percent (1 quart per gallon of base paint) with the appropriate thinner; when ambient and steel temperatures are above normal, up to 40-percent thinning may be necessary for satisfactory application.

3.2.12 Coal Tar-Epoxy (Black) Paint (Formula C-200a)

3.2.12.1 Mixing

Component B shall be added to previously stirred Component A and thoroughly mixed together with a heavy-duty mechanical stirrer just prior to use. The use of not more than 1 pint of xylene thinner per gallon of paint will be permitted to improve application properties and extend pot life. The pot life of the mixed paint, extended by permissible thinning, may vary from 2 hours in very warm weather to 5 or more hours in cool weather. Pot life in warm weather may be extended by precooling the components prior to mixing; cooling the mixed material; and/or by slow, continuous stirring during the application period. The mixed material shall be applied before unreasonable increases in viscosity take place.

3.2.12.2 Application

Spray guns shall be of the conventional type equipped with a fluid tip of approximately 0.09 inch in diameter and external atomization, seven-hole air cap. Material shall be supplied to the spray gun from a bottom withdrawal pot or by means of a fluid pump; hose shall be 1/2 inch in diameter. Atomization air pressure shall not be less than 80 psi. High-pressure airless spray equipment may be used only on broad, simply configured surfaces. Brush application shall be with a stiff-bristled tool heavily laden with material and wielded in a manner to spread the coating smoothly and quickly without excessive brushing. The coverage rate of the material is approximately 110 square feet per gallon per coat to obtain 20 mils (dry thickness) in a two-coat system. The paint shall flow together and provide a coherent, pinhole-free film. The direction of the spray passes (or finish strokes if brushed) of the second coat shall be at right angles to those of the first where practicable.

3.2.12.3 Subsequent Coats

Except at the high temperatures discussed later in this paragraph, the drying time between coal tar-epoxy coats shall not be more than 72 hours, and application of a subsequent coat as soon as the undercoat is reasonably firm is strongly encouraged. Where the temperature for substrate or coating surfaces during application or curing exceeds or can be expected to exceed 125 degrees F as the result of direct exposure to sunlight, the surfaces shall be shaded by overhead cover or the interval between coats shall be reduced as may be found necessary to avoid poor intercoat adhesion. Here, poor intercoat adhesion is defined as the inability of two or more dried coats of coal tar-epoxy paint to resist delamination when tested aggressively with a sharp knife. Under the most extreme conditions involving high ambient temperatures and sun-exposed surfaces, the drying time between coats shall not exceed 10 hours, and the reduction of this interval to a few hours or less is strongly encouraged. Where the curing time of a coal tar-epoxy undercoat exceeds 72 hours of curing at normal temperatures, 10 hours at extreme conditions, or where the undercoat develops a heavy blush, it shall be given one of the following treatments before the subsequent coat is applied:

- a. Etch the coating surface lightly by brush-off blasting, using fine sand, low air pressure, and a nozzle-to-surface distance of approximately 3 feet.
- b. Remove the blush and/or soften the surface of the coating by wiping it with cloths dampened with 1-methyl-2-pyrrolidone. The solvents may be applied to the surface by fog spraying followed by wiping, but any puddles of solvent must be mopped up immediately after they form. The subsequent coat shall be applied in not less than 15 minutes or more than 3 hours after the solvent treatment.

3.2.12.4 Ambient Temperature

Coal tar-epoxy paint shall not be applied when the receiving surface or the ambient air is below 50 degrees F nor unless it can be reasonably anticipated that the average ambient temperature will be 50 degrees F or higher for the 5-day period subsequent to the application of any coat.

3.2.12.5 Safety

In addition to the safety provisions in paragraph SAFETY AND HEALTH PROVISIONS, other workmen as well as painters shall avoid inhaling atomized particles of coal tar-epoxy paint and contact of the paint with the skin.

3.3 PAINT SYSTEMS APPLICATION

The required paint systems and the surfaces to which they shall be applied are shown in this paragraph, and/or in the drawings. Supplementary information follows.

3.3.1 Surface Preparation

The method of surface preparation and pretreatment shown in the tabulation of paint systems is for identification purposes only. Cleaning and pretreatment of surfaces prior to painting shall be accomplished in accordance with detailed requirements previously described.

3.3.2 System No. 2

The first coat shall be brush or spray applied in the shop or field as indicated at a maximum spreading rate of 500 square feet per gallon and touched up in the field as necessary to maintain its integrity at all times. The second or third coats of the system shall be applied in the field at a maximum spreading rate of 450 square feet per gallon. Prior to applying field coats, all field welds, other bare metal, and damaged areas of the shop-primed surfaces shall be cleaned and primed as previously specified except that application shall be by brush.

3.3.3 System No. 5-E-Z

Paint shall be spray applied to an average dry film thickness of a minimum of 7.0 mils for the completed system, and the thickness at any point shall not be less than 5.5 mils. The dry film thickness of the zinc-rich primer shall be approximately 2.5 mils. The specified film thickness shall be attained in any event, and any extra coats needed to attain the specified thickness shall be applied at no additional cost to the Government. Attaining the specified film thickness by applying fewer than the prescribed number of coats or spray passes will be acceptable provided heavier applications do not cause an increase in pinholes, bubbles, blisters, or voids in the dried film and also provided that not more than 2.0 mils (dry film thickness) per double spray coat nor more than 1.0 mil per single spray pass of nonzinc paint shall be applied at one time.

3.3.4 System No. 6

Paint shall be spray or brush applied with a minimum of two coats to provide a minimum total thickness at any point of 16 mils. The specified film thickness shall be attained in any event, and any additional (beyond two) coats needed to attain specified thickness shall be applied at no additional cost to the Government.

3.4 PAINTING SCHEDULES

SYSTEM NO. 2

Items or surfaces to be coated: Ferrous surfaces of underside of machinery platform and base

SURFACE PREPARATION	1st COAT	2nd COAT	3rd COAT
Alternate 1 Power tool or brush-off blast cleaning	SSPC Paint 25 Type I	P-38 (Aluminum)	P-38 (Aluminum)
Alternate 2 Commercial blast cleaning	SSPC Paint 25 Type II	P-38 (Aluminum)	P-38 (Aluminum)

SYSTEM NO. 5-E-Z

Items or surfaces to be coated: Ferrous surfaces of tainter gates including exposed surfaces of stainless steel bolts, nuts and washers except the hitch blocks

SURFACE PREPARATION	1st COAT	2nd COAT	3rd COAT	4th COAT
White metal blast cleaning	Vinyl zinc- rich VZ-108d (double spray coat)	Gray Vinyl V-766e (double spray coat)	White Vinyl V-766e (double spray coat)	Gray Vinyl V-766e (double spray coat)

SYSTEM NO. 6

Items or surfaces to be coated: Tainter Gate Hitch Blocks

SURFACE PREPARATION	1st COAT	2nd COAT	3rd COAT
White metal blast cleaning	Coal tar- epoxy C-200a (black)	Coal tar- epoxy C-200a (black)	Coal tar- epoxy C-200a (black) (if needed to attain required thickness)

3.5 LEAD BASED PAINT TEST (LBP) REPORT OF FINDINGS

Paint test locations and results of the tests are as follows:

Sample	Analysis	Concentration	Units
Trunnion Anchorage Paint	Total Lead	168	mg/Kg
Gate Arm Paint	Total Lead	239	mg/Kg
Machinery Support Paint	Total Lead	216,000	mg/Kg
Upstream Skin Plate	Total Lead	391	mg/Kg

Mg/Kg: milligrams per kilogram

-- End of Section --